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Title 29: Labor

PART 1904—RECORDING AND REPORTING OCCUPATIONAL INJURIES AND ILLNESSES

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AUTHORITY: 29 U.S.C. 657, 658, 660, 666, 669, 673, Secretary of Labor's Orders No. 3-2000 (65 FR 50017) and 1-2012 (77 FR 3912), as applicable, and 5 U.S.C. 553.

SOURCE: 66 FR 6122, Jan. 19, 2001, unless otherwise noted.

EDITORIAL NOTE: At 82 FR 20548, May 3, 2017, as required by the Congressional Review Act and Public Law 115-21, the Occupational Safety and Health Administration removed all amendments to part 1904 published at 81 FR 91792, Dec. 19, 2016.

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Subpart A—Purpose

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§1904.0 Purpose.

The purpose of this rule (part 1904) is to require employers to record and report work-related fatalities, injuries, and illnesses.

NOTE TO §1904.0: Recording or reporting a work-related injury, illness, or fatality does not mean that the employer or employee was at fault, that an OSHA rule has been violated, or that the employee is eligible for workers' compensation or other benefits.

[82 FR 20548, May 3, 2017]

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Subpart B—Scope

NOTE TO SUBPART B: All employers covered by the Occupational Safety and Health Act (OSH Act) are covered by these part 1904 regulations. However, most employers do not have to keep OSHA injury and illness records unless OSHA or the Bureau of Labor Statistics (BLS) informs them in writing that they must keep records. For example, employers with 10 or fewer employees and business establishments in certain industry classifications are partially exempt from keeping OSHA injury and illness records.

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§1904.1 Partial exemption for employers with 10 or fewer employees.

(a) *Basic requirement.* (1) If your company had ten (10) or fewer employees at all times during the last calendar year, you do not need to keep OSHA injury and illness records unless OSHA or the BLS informs you in writing that you must keep records under §1904.41 or §1904.42. However, as required by §1904.39, all employers covered by the OSH Act must report to OSHA any workplace incident that results in a fatality or the hospitalization of three or more employees.

(2) If your company had more than ten (10) employees at any time during the last calendar year, you must keep OSHA injury and illness records unless your establishment is classified as a partially exempt industry under §1904.2.

(b) *Implementation*—(1) *Is the partial exemption for size based on the size of my entire company or on the size of an individual business establishment?* The partial exemption for size is based on the number of employees in the entire company.

(2) *How do I determine the size of my company to find out if I qualify for the partial exemption for size?* To determine if you are exempt because of size, you need to determine your company's peak employment during the last calendar year. If you had no more than 10 employees at any time in the last calendar year, your company qualifies for the partial exemption for size.

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§1904.2 Partial exemption for establishments in certain industries.

(a) *Basic requirement.* (1) If your business establishment is classified in a specific industry group listed in appendix A to this subpart, you do not need to keep OSHA injury and illness records unless the government asks you to keep the records under §1904.41 or §1904.42. However, all employers must report to OSHA any workplace incident that results in an employee's fatality, in-patient hospitalization, amputation, or loss of an eye (see §1904.39).

(2) If one or more of your company's establishments are classified in a non-exempt industry, you must keep OSHA injury and illness records for all of such establishments unless your company is partially exempted because of size under §1904.1.

(b) *Implementation*—(1) *Is the partial industry classification exemption based on the industry classification of my entire company or on the classification of individual business establishments operated by my company?* The partial industry classification exemption applies to individual business establishments. If a company has several business establishments engaged in different classes of business activities, some of the company's establishments may be required to keep records, while others may be partially exempt.

(2) *How do I determine the correct NAICS code for my company or for individual establishments?* You can determine your NAICS code by using one of three methods, or you may contact your nearest OSHA office or State agency for help in determining your NAICS code:

(i) You can use the search feature at the U.S. Census Bureau NAICS main Web page: <http://www.census.gov/eos/www/naics/>. In the search box for the most recent NAICS, enter a keyword that describes your kind of business. A list of primary business activities containing that keyword and the corresponding NAICS codes will appear. Choose the one that most closely corresponds to your primary business activity, or refine your search to obtain other choices.

(ii) Rather than searching through a list of primary business activities, you may also view the most recent complete NAICS structure with codes and titles by clicking on the link for the most recent NAICS on the U.S. Census Bureau NAICS main Web page: <http://www.census.gov/eos/www/naics/>. Then click on the two-digit Sector code to see all the NAICS codes under that Sector. Then choose the six-digit code of your interest to see the corresponding definition, as well as cross-references and index items, when available.

(iii) If you know your old SIC code, you can also find the appropriate 2002 NAICS code by using the detailed conversion (concordance) between the 1987 SIC and 2002 NAICS available in Excel format for download at the "Concordances" link at the U.S. Census Bureau NAICS main Web page: <http://www.census.gov/eos/www/naics/>.

[66 FR 6122, Jan. 19, 2001, as amended at 79 FR 56186, Sept. 18, 2014]

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§1904.3 Keeping records for more than one agency.

If you create records to comply with another government agency's injury and illness recordkeeping requirements, OSHA will consider those records as meeting OSHA's part 1904 recordkeeping requirements if OSHA accepts the other agency's records under a memorandum of understanding with that agency, or if the other agency's records contain the same information as this part 1904 requires you to record. You may contact your nearest OSHA office or State agency for help in determining whether your records meet OSHA's requirements.

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Non-Mandatory Appendix A to Subpart B of Part 1904—Partially Exempt Industries

Employers are not required to keep OSHA injury and illness records for any establishment classified in the following North American Industry Classification System (NAICS) codes, unless they are asked in writing to do so by OSHA, the Bureau of Labor Statistics (BLS), or a state agency operating under the authority of OSHA or the BLS. All employers, including those partially exempted by reason of company size or industry classification, must report to OSHA any employee's fatality, in-patient hospitalization, amputation, or loss of an eye (see §1904.39).

NAICS Code	Industry
4412	Other Motor Vehicle Dealers.
4431	Electronics and Appliance Stores.
4461	Health and Personal Care Stores.
4471	Gasoline Stations.
4481	Clothing Stores.
4482	Shoe Stores.
4483	Jewelry, Luggage, and Leather Goods Stores.
4511	Sporting Goods, Hobby, and Musical Instrument Stores.
4512	Book, Periodical, and Music Stores.
4531	Florists.
4532	Office Supplies, Stationery, and Gift Stores.
4812	Nonscheduled Air Transportation.
4861	Pipeline Transportation of Crude Oil.
4862	Pipeline Transportation of Natural Gas.
4869	Other Pipeline Transportation.
4879	Scenic and Sightseeing Transportation, Other.

4885	Freight Transportation Arrangement.
5111	Newspaper, Periodical, Book, and Directory Publishers.
5112	Software Publishers.
5121	Motion Picture and Video Industries.
5122	Sound Recording Industries.
5151	Radio and Television Broadcasting.
5172	Wireless Telecommunications Carriers (except Satellite).
5173	Telecommunications Resellers.
5179	Other Telecommunications.
5181	Internet Service Providers and Web Search Portals.
5182	Data Processing, Hosting, and Related Services.
5191	Other Information Services.
5211	Monetary Authorities—Central Bank.
5221	Depository Credit Intermediation.
5222	Nondepository Credit Intermediation.
5223	Activities Related to Credit Intermediation.
5231	Securities and Commodity Contracts Intermediation and Brokerage.
5232	Securities and Commodity Exchanges.
5239	Other Financial Investment Activities.
5241	Insurance Carriers.
5242	Agencies, Brokerages, and Other Insurance Related Activities.
5251	Insurance and Employee Benefit Funds.
5259	Other Investment Pools and Funds.
5312	Offices of Real Estate Agents and Brokers.
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works).
5411	Legal Services.
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services.
5413	Architectural, Engineering, and Related Services.
5414	Specialized Design Services.
5415	Computer Systems Design and Related Services.
5416	Management, Scientific, and Technical Consulting Services.
5417	Scientific Research and Development Services.
5418	Advertising and Related Services.
5511	Management of Companies and Enterprises.
5611	Office Administrative Services.
5614	Business Support Services.
5615	Travel Arrangement and Reservation Services.
5616	Investigation and Security Services.
6111	Elementary and Secondary Schools.
6112	Junior Colleges.
6113	Colleges, Universities, and Professional Schools.
6114	Business Schools and Computer and Management Training.
6115	Technical and Trade Schools.
6116	Other Schools and Instruction.
6117	Educational Support Services.
6211	Offices of Physicians.
6212	Offices of Dentists.
6213	Offices of Other Health Practitioners.
6214	Outpatient Care Centers.
6215	Medical and Diagnostic Laboratories.
6244	Child Day Care Services.
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures.
7115	Independent Artists, Writers, and Performers.
7213	Rooming and Boarding Houses.
7221	Full-Service Restaurants.
7222	Limited-Service Eating Places.
7224	Drinking Places (Alcoholic Beverages).
8112	Electronic and Precision Equipment Repair and Maintenance.
8114	Personal and Household Goods Repair and Maintenance.
8121	Personal Care Services.
8122	Death Care Services.
8131	Religious Organizations.
8132	Grantmaking and Giving Services.
8133	Social Advocacy Organizations.
8134	Civic and Social Organizations.
8139	Business, Professional, Labor, Political, and Similar Organizations.

[79 FR 56186, Sept. 18, 2014]

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Subpart C—Recordkeeping Forms and Recording Criteria

NOTE TO SUBPART C: This subpart describes the work-related injuries and illnesses that an employer must enter into the OSHA records and explains the OSHA forms that employers must use to record work-related fatalities, injuries, and illnesses.

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§1904.4 Recording criteria.

(a) **Basic requirement.** Each employer required by this part to keep records of fatalities, injuries, and illnesses must record each fatality, injury and illness that:

(1) Is work-related; and

(2) Is a new case; and

(3) Meets one or more of the general recording criteria of §1904.7 or the application to specific cases of §§1904.8 through 1904.12.

(b) **Implementation—(1)** *What sections of this rule describe recording criteria for recording work-related injuries and illnesses?* The table below indicates which sections of the rule address each topic.

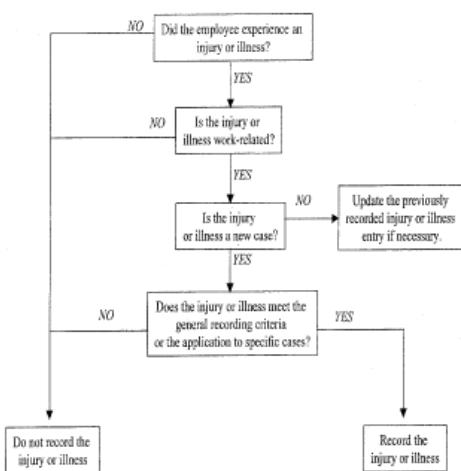
(i) Determination of work-relatedness. See §1904.5.

(ii) Determination of a new case. See §1904.6.

(iii) General recording criteria. See §1904.7.

(iv) Additional criteria. (Needlestick and sharps injury cases, tuberculosis cases, hearing loss cases, medical removal cases, and musculoskeletal disorder cases). See §§1904.8 through 1904.12.

(2) **How do I decide whether a particular injury or illness is recordable?** The decision tree for recording work-related injuries and illnesses below shows the steps involved in making this determination.



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[66 FR 6122, Jan. 19, 2001, as amended at 81 FR 91809, Dec. 19, 2016; 82 FR 20548, May 3, 2017]

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§1904.5 Determination of work-relatedness.

(a) **Basic requirement.** You must consider an injury or illness to be work-related if an event or exposure in the work environment either caused or contributed to the resulting condition or significantly aggravated a pre-existing injury or illness. Work-relatedness is presumed for injuries and illnesses resulting from events or exposures occurring in the work environment, unless an exception in §1904.5(b)(2) specifically applies.

(b) **Implementation.** (1) What is the “work environment”? OSHA defines the work environment as “the establishment and other locations where one or more employees are working or are present as a condition of their employment. The work environment includes not only physical locations, but also the equipment or materials used by the employee during the course of his or her work.”

(2) *Are there situations where an injury or illness occurs in the work environment and is not considered work-related?* Yes, an injury or illness occurring in the work environment that falls under one of the following exceptions is not work-related, and therefore is not recordable.

1904.5(b)	You are not required to record injuries and illnesses if . . .
(i)	At the time of the injury or illness, the employee was present in the work environment as a member of the general public rather than as an employee.
(ii)	The injury or illness involves signs or symptoms that surface at work but result solely from a non-work-related event or exposure that occurs outside the work environment.
(iii)	The injury or illness results solely from voluntary participation in a wellness program or in a medical, fitness, or recreational activity such as blood donation, physical examination, flu shot, exercise class, racquetball, or baseball.
(iv)	The injury or illness is solely the result of an employee eating, drinking, or preparing food or drink for personal consumption (whether bought on the employer's premises or brought in). For example, if the employee is injured by choking on a sandwich while in the employer's establishment, the case would not be considered work-related.
	Note: If the employee is made ill by ingesting food contaminated by workplace contaminants (such as lead), or gets food poisoning from food supplied by the employer, the case would be considered work-related.
(v)	The injury or illness is solely the result of an employee doing personal tasks (unrelated to their employment) at the establishment outside of the employee's assigned working hours.
(vi)	The injury or illness is solely the result of personal grooming, self medication for a non-work-related condition, or is intentionally self-inflicted.
(vii)	The injury or illness is caused by a motor vehicle accident and occurs on a company parking lot or company access road while the employee is commuting to or from work.
(viii)	The illness is the common cold or flu (Note: contagious diseases such as tuberculosis, brucellosis, hepatitis A, or plague are considered work-related if the employee is infected at work).
(ix)	The illness is a mental illness. Mental illness will not be considered work-related unless the employee voluntarily provides the employer with an opinion from a physician or other licensed health care professional with appropriate training and experience (psychiatrist, psychologist, psychiatric nurse practitioner, etc.) stating that the employee has a mental illness that is work-related.

(3) *How do I handle a case if it is not obvious whether the precipitating event or exposure occurred in the work environment or occurred away from work?* In these situations, you must evaluate the employee's work duties and environment to decide whether or not one or more events or exposures in the work environment either caused or contributed to the resulting condition or significantly aggravated a pre-existing condition.

(4) *How do I know if an event or exposure in the work environment "significantly aggravated" a preexisting injury or illness?* A preexisting injury or illness has been significantly aggravated, for purposes of OSHA injury and illness recordkeeping, when an event or exposure in the work environment results in any of the following:

- (i) Death, provided that the preexisting injury or illness would likely not have resulted in death but for the occupational event or exposure.
- (ii) Loss of consciousness, provided that the preexisting injury or illness would likely not have resulted in loss of consciousness but for the occupational event or exposure.
- (iii) One or more days away from work, or days of restricted work, or days of job transfer that otherwise would not have occurred but for the occupational event or exposure.
- (iv) Medical treatment in a case where no medical treatment was needed for the injury or illness before the workplace event or exposure, or a change in medical treatment was necessitated by the workplace event or exposure.

(5) *Which injuries and illnesses are considered pre-existing conditions?* An injury or illness is a preexisting condition if it resulted solely from a non-work-related event or exposure that occurred outside the work environment.

(6) *How do I decide whether an injury or illness is work-related if the employee is on travel status at the time the injury or illness occurs?* Injuries and illnesses that occur while an employee is on travel status are work-related if, at the time of the injury or illness, the employee was engaged in work activities "in the interest of the employer." Examples of such activities include travel to and from customer contacts, conducting job tasks, and entertaining or being entertained to transact, discuss, or promote business (work-related entertainment includes only entertainment activities being engaged in at the direction of the employer).

Injuries or illnesses that occur when the employee is on travel status do not have to be recorded if they meet one of the exceptions listed below.

1904.5(b)(6)	If the employee has . . .	You may use the following to determine if an injury or illness is work-related
(i)	checked into a hotel or motel for one or more days	When a traveling employee checks into a hotel, motel, or into an other temporary residence, he or she establishes a "home away from home." You must evaluate the employee's activities after he or she checks into the hotel, motel, or other temporary residence for their work-relatedness in the same manner as you evaluate the activities of a non-traveling employee. When the employee checks into the temporary residence, he or she is considered to have left the work environment. When the employee begins work each day, he or she re-enters the work environment. If the employee has established a "home away from home" and is reporting to a fixed worksite each day, you also do not consider injuries or illnesses work-related if they occur while the employee is commuting between the temporary residence and the job location.

(ii)	taken a detour for personal reasons	Injuries or illnesses are not considered work-related if they occur while the employee is on a personal detour from a reasonably direct route of travel (e.g., has taken a side trip for personal reasons).
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(7) *How do I decide if a case is work-related when the employee is working at home?* Injuries and illnesses that occur while an employee is working at home, including work in a home office, will be considered work-related if the injury or illness occurs while the employee is performing work for pay or compensation in the home, and the injury or illness is directly related to the performance of work rather than to the general home environment or setting. For example, if an employee drops a box of work documents and injures his or her foot, the case is considered work-related. If an employee's fingernail is punctured by a needle from a sewing machine used to perform garment work at home, becomes infected and requires medical treatment, the injury is considered work-related. If an employee is injured because he or she trips on the family dog while rushing to answer a work phone call, the case is not considered work-related. If an employee working at home is electrocuted because of faulty home wiring, the injury is not considered work-related.

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§1904.6 Determination of new cases.

(a) *Basic requirement.* You must consider an injury or illness to be a “new case” if:

(1) The employee has not previously experienced a recorded injury or illness of the same type that affects the same part of the body, or

(2) The employee previously experienced a recorded injury or illness of the same type that affected the same part of the body but had recovered completely (all signs and symptoms had disappeared) from the previous injury or illness and an event or exposure in the work environment caused the signs or symptoms to reappear.

(b) *Implementation—(1) When an employee experiences the signs or symptoms of a chronic work-related illness, do I need to consider each recurrence of signs or symptoms to be a new case?* No, for occupational illnesses where the signs or symptoms may recur or continue in the absence of an exposure in the workplace, the case must only be recorded once. Examples may include occupational cancer, asbestosis, byssinosis and silicosis.

(2) *When an employee experiences the signs or symptoms of an injury or illness as a result of an event or exposure in the workplace, such as an episode of occupational asthma, must I treat the episode as a new case?* Yes, because the episode or recurrence was caused by an event or exposure in the workplace, the incident must be treated as a new case.

(3) *May I rely on a physician or other licensed health care professional to determine whether a case is a new case or a recurrence of an old case?* You are not required to seek the advice of a physician or other licensed health care professional. However, if you do seek such advice, you must follow the physician or other licensed health care professional's recommendation about whether the case is a new case or a recurrence. If you receive recommendations from two or more physicians or other licensed health care professionals, you must make a decision as to which recommendation is the most authoritative (best documented, best reasoned, or most authoritative), and record the case based upon that recommendation.

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§1904.7 General recording criteria.

(a) *Basic requirement.* You must consider an injury or illness to meet the general recording criteria, and therefore to be recordable, if it results in any of the following: death, days away from work, restricted work or transfer to another job, medical treatment beyond first aid, or loss of consciousness. You must also consider a case to meet the general recording criteria if it involves a significant injury or illness diagnosed by a physician or other licensed health care professional, even if it does not result in death, days away from work, restricted work or job transfer, medical treatment beyond first aid, or loss of consciousness.

(b) *Implementation—(1) How do I decide if a case meets one or more of the general recording criteria?* A work-related injury or illness must be recorded if it results in one or more of the following:

(i) Death. See §1904.7(b)(2).

(ii) Days away from work. See §1904.7(b)(3).

(iii) Restricted work or transfer to another job. See §1904.7(b)(4).

(iv) Medical treatment beyond first aid. See §1904.7(b)(5).

(v) Loss of consciousness. See §1904.7(b)(6).

(vi) A significant injury or illness diagnosed by a physician or other licensed health care professional. See §1904.7(b)(7).

(2) *How do I record a work-related injury or illness that results in the employee's death?* You must record an injury or illness that results in death by entering a check mark on the OSHA 300 Log in the space for cases resulting in death. You must also report any work-related fatality to OSHA within eight (8) hours, as required by §1904.39.

(3) *How do I record a work-related injury or illness that results in days away from work?* When an injury or illness involves one or more days away from work, you must record the injury or illness on the OSHA 300 Log with a check mark in the space for cases involving days away and an entry of the number of calendar days away from work in the number of days column. If the employee is out for an extended period of time, you must enter an estimate of the days that the employee will be away, and update the day count when the actual number of days is known.

(i) *Do I count the day on which the injury occurred or the illness began?* No, you begin counting days away on the day after the injury occurred or the illness began.

(ii) *How do I record an injury or illness when a physician or other licensed health care professional recommends that the worker stay at home but the employee comes to work anyway?* You must record these injuries and illnesses on the OSHA 300 Log using the check box for cases with days away from work and enter the number of calendar days away recommended by the physician or other licensed health care professional. If a physician or other licensed health care professional recommends days away, you should encourage your employee to follow that recommendation. However, the days away must be recorded whether the injured or ill employee follows the physician or licensed health care professional's recommendation or not. If you receive recommendations from two or more physicians or other licensed health care professionals, you may make a decision as to which recommendation is the most authoritative, and record the case based upon that recommendation.

(iii) *How do I handle a case when a physician or other licensed health care professional recommends that the worker return to work but the employee stays at home anyway?* In this situation, you must end the count of days away from work on the date the physician or other licensed health care professional recommends that the employee return to work.

(iv) *How do I count weekends, holidays, or other days the employee would not have worked anyway?* You must count the number of calendar days the employee was unable to work as a result of the injury or illness, regardless of whether or not the employee was scheduled to work on those day(s). Weekend days, holidays, vacation days or other days off are included in the total number of days recorded if the employee would not have been able to work on those days because of a work-related injury or illness.

(v) *How do I record a case in which a worker is injured or becomes ill on a Friday and reports to work on a Monday, and was not scheduled to work on the weekend?* You need to record this case only if you receive information from a physician or other licensed health care professional indicating that the employee should not have worked, or should have performed only restricted work, during the weekend. If so, you must record the injury or illness as a case with days away from work or restricted work, and enter the day counts, as appropriate.

(vi) *How do I record a case in which a worker is injured or becomes ill on the day before scheduled time off such as a holiday, a planned vacation, or a temporary plant closing?* You need to record a case of this type only if you receive information from a physician or other licensed health care professional indicating that the employee should not have worked, or should have performed only restricted work, during the scheduled time off. If so, you must record the injury or illness as a case with days away from work or restricted work, and enter the day counts, as appropriate.

(vii) *Is there a limit to the number of days away from work I must count?* Yes, you may "cap" the total days away at 180 calendar days. You are not required to keep track of the number of calendar days away from work if the injury or illness resulted in more than 180 calendar days away from work and/or days of job transfer or restriction. In such a case, entering 180 in the total days away column will be considered adequate.

(viii) *May I stop counting days if an employee who is away from work because of an injury or illness retires or leaves my company?* Yes, if the employee leaves your company for some reason unrelated to the injury or illness, such as retirement, a plant closing, or to take another job, you may stop counting days away from work or days of restriction/job transfer. If the employee leaves your company because of the injury or illness, you must estimate the total number of days away or days of restriction/job transfer and enter the day count on the 300 Log.

(ix) *If a case occurs in one year but results in days away during the next calendar year, do I record the case in both years?* No, you only record the injury or illness once. You must enter the number of calendar days away for the injury or illness on the OSHA 300 Log for the year in which the injury or illness occurred. If the employee is still away from work because of the injury or illness when you prepare the annual summary, estimate the total number of calendar days you expect the employee to be

away from work, use this number to calculate the total for the annual summary, and then update the initial log entry later when the day count is known or reaches the 180-day cap.

(4) *How do I record a work-related injury or illness that results in restricted work or job transfer?* When an injury or illness involves restricted work or job transfer but does not involve death or days away from work, you must record the injury or illness on the OSHA 300 Log by placing a check mark in the space for job transfer or restriction and an entry of the number of restricted or transferred days in the restricted workdays column.

(i) *How do I decide if the injury or illness resulted in restricted work?* Restricted work occurs when, as the result of a work-related injury or illness:

(A) You keep the employee from performing one or more of the routine functions of his or her job, or from working the full workday that he or she would otherwise have been scheduled to work; or

(B) A physician or other licensed health care professional recommends that the employee not perform one or more of the routine functions of his or her job, or not work the full workday that he or she would otherwise have been scheduled to work.

(ii) *What is meant by "routine functions"?* For recordkeeping purposes, an employee's routine functions are those work activities the employee regularly performs at least once per week.

(iii) *Do I have to record restricted work or job transfer if it applies only to the day on which the injury occurred or the illness began?* No, you do not have to record restricted work or job transfers if you, or the physician or other licensed health care professional, impose the restriction or transfer only for the day on which the injury occurred or the illness began.

(iv) *If you or a physician or other licensed health care professional recommends a work restriction, is the injury or illness automatically recordable as a "restricted work" case?* No, a recommended work restriction is recordable only if it affects one or more of the employee's routine job functions. To determine whether this is the case, you must evaluate the restriction in light of the routine functions of the injured or ill employee's job. If the restriction from you or the physician or other licensed health care professional keeps the employee from performing one or more of his or her routine job functions, or from working the full workday the injured or ill employee would otherwise have worked, the employee's work has been restricted and you must record the case.

(v) *How do I record a case where the worker works only for a partial work shift because of a work-related injury or illness?* A partial day of work is recorded as a day of job transfer or restriction for recordkeeping purposes, except for the day on which the injury occurred or the illness began.

(vi) *If the injured or ill worker produces fewer goods or services than he or she would have produced prior to the injury or illness but otherwise performs all of the routine functions of his or her work, is the case considered a restricted work case?* No, the case is considered restricted work only if the worker does not perform all of the routine functions of his or her job or does not work the full shift that he or she would otherwise have worked.

(vii) *How do I handle vague restrictions from a physician or other licensed health care professional, such as that the employee engage only in "light duty" or "take it easy for a week"?* If you are not clear about the physician or other licensed health care professional's recommendation, you may ask that person whether the employee can do all of his or her routine job functions and work all of his or her normally assigned work shift. If the answer to both of these questions is "Yes," then the case does not involve a work restriction and does not have to be recorded as such. If the answer to one or both of these questions is "No," the case involves restricted work and must be recorded as a restricted work case. If you are unable to obtain this additional information from the physician or other licensed health care professional who recommended the restriction, record the injury or illness as a case involving restricted work.

(viii) *What do I do if a physician or other licensed health care professional recommends a job restriction meeting OSHA's definition, but the employee does all of his or her routine job functions anyway?* You must record the injury or illness on the OSHA 300 Log as a restricted work case. If a physician or other licensed health care professional recommends a job restriction, you should ensure that the employee complies with that restriction. If you receive recommendations from two or more physicians or other licensed health care professionals, you may make a decision as to which recommendation is the most authoritative, and record the case based upon that recommendation.

(ix) *How do I decide if an injury or illness involved a transfer to another job?* If you assign an injured or ill employee to a job other than his or her regular job for part of the day, the case involves transfer to another job. Note: This does not include the day on which the injury or illness occurred.

(x) *Are transfers to another job recorded in the same way as restricted work cases?* Yes, both job transfer and restricted work cases are recorded in the same box on the OSHA 300 Log. For example, if you assign, or a physician or other licensed health care professional recommends that you assign, an injured or ill worker to his or her routine job duties for part of the day

and to another job for the rest of the day, the injury or illness involves a job transfer. You must record an injury or illness that involves a job transfer by placing a check in the box for job transfer.

(xi) *How do I count days of job transfer or restriction?* You count days of job transfer or restriction in the same way you count days away from work, using §1904.7(b)(3)(i) to (viii), above. The only difference is that, if you permanently assign the injured or ill employee to a job that has been modified or permanently changed in a manner that eliminates the routine functions the employee was restricted from performing, you may stop the day count when the modification or change is made permanent. You must count at least one day of restricted work or job transfer for such cases.

(5) *How do I record an injury or illness that involves medical treatment beyond first aid?* If a work-related injury or illness results in medical treatment beyond first aid, you must record it on the OSHA 300 Log. If the injury or illness did not involve death, one or more days away from work, one or more days of restricted work, or one or more days of job transfer, you enter a check mark in the box for cases where the employee received medical treatment but remained at work and was not transferred or restricted.

(i) *What is the definition of medical treatment?* “Medical treatment” means the management and care of a patient to combat disease or disorder. For the purposes of part 1904, medical treatment does not include:

(A) Visits to a physician or other licensed health care professional solely for observation or counseling;

(B) The conduct of diagnostic procedures, such as x-rays and blood tests, including the administration of prescription medications used solely for diagnostic purposes (e.g., eye drops to dilate pupils); or

(C) “First aid” as defined in paragraph (b)(5)(ii) of this section.

(ii) *What is “first aid”?* For the purposes of part 1904, “first aid” means the following:

(A) Using a non-prescription medication at nonprescription strength (for medications available in both prescription and non-prescription form, a recommendation by a physician or other licensed health care professional to use a non-prescription medication at prescription strength is considered medical treatment for recordkeeping purposes);

(B) Administering tetanus immunizations (other immunizations, such as Hepatitis B vaccine or rabies vaccine, are considered medical treatment);

(C) Cleaning, flushing or soaking wounds on the surface of the skin;

(D) Using wound coverings such as bandages, Band-Aids™, gauze pads, etc.; or using butterfly bandages or Steri-Strips™ (other wound closing devices such as sutures, staples, etc., are considered medical treatment);

(E) Using hot or cold therapy;

(F) Using any non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts, etc. (devices with rigid stays or other systems designed to immobilize parts of the body are considered medical treatment for recordkeeping purposes);

(G) Using temporary immobilization devices while transporting an accident victim (e.g., splints, slings, neck collars, back boards, etc.).

(H) Drilling of a fingernail or toenail to relieve pressure, or draining fluid from a blister;

(I) Using eye patches;

(J) Removing foreign bodies from the eye using only irrigation or a cotton swab;

(K) Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs or other simple means;

(L) Using finger guards;

(M) Using massages (physical therapy or chiropractic treatment are considered medical treatment for recordkeeping purposes); or

(N) Drinking fluids for relief of heat stress.

(iii) *Are any other procedures included in first aid?* No, this is a complete list of all treatments considered first aid for part 1904 purposes.

(iv) *Does the professional status of the person providing the treatment have any effect on what is considered first aid or medical treatment?* No, OSHA considers the treatments listed in §1904.7(b)(5)(ii) of this part to be first aid regardless of the professional status of the person providing the treatment. Even when these treatments are provided by a physician or other licensed health care professional, they are considered first aid for the purposes of part 1904. Similarly, OSHA considers treatment beyond first aid to be medical treatment even when it is provided by someone other than a physician or other licensed health care professional.

(v) *What if a physician or other licensed health care professional recommends medical treatment but the employee does not follow the recommendation?* If a physician or other licensed health care professional recommends medical treatment, you should encourage the injured or ill employee to follow that recommendation. However, you must record the case even if the injured or ill employee does not follow the physician or other licensed health care professional's recommendation.

(6) *Is every work-related injury or illness case involving a loss of consciousness recordable?* Yes, you must record a work-related injury or illness if the worker becomes unconscious, regardless of the length of time the employee remains unconscious.

(7) *What is a “significant” diagnosed injury or illness that is recordable under the general criteria even if it does not result in death, days away from work, restricted work or job transfer, medical treatment beyond first aid, or loss of consciousness?* Work-related cases involving cancer, chronic irreversible disease, a fractured or cracked bone, or a punctured eardrum must always be recorded under the general criteria at the time of diagnosis by a physician or other licensed health care professional.

NOTE TO §1904.7: OSHA believes that most significant injuries and illnesses will result in one of the criteria listed in §1904.7(a): death, days away from work, restricted work or job transfer, medical treatment beyond first aid, or loss of consciousness. However, there are some significant injuries, such as a punctured eardrum or a fractured toe or rib, for which neither medical treatment nor work restrictions may be recommended. In addition, there are some significant progressive diseases, such as byssinosis, silicosis, and some types of cancer, for which medical treatment or work restrictions may not be recommended at the time of diagnosis but are likely to be recommended as the disease progresses. OSHA believes that cancer, chronic irreversible diseases, fractured or cracked bones, and punctured eardrums are generally considered significant injuries and illnesses, and must be recorded at the initial diagnosis even if medical treatment or work restrictions are not recommended, or are postponed, in a particular case.

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§1904.8 Recording criteria for needlestick and sharps injuries.

(a) *Basic requirement.* You must record all work-related needlestick injuries and cuts from sharp objects that are contaminated with another person's blood or other potentially infectious material (as defined by 29 CFR 1910.1030). You must enter the case on the OSHA 300 Log as an injury. To protect the employee's privacy, you may not enter the employee's name on the OSHA 300 Log (see the requirements for privacy cases in paragraphs 1904.29(b)(6) through 1904.29(b)(9)).

(b) *Implementation—(1) What does “other potentially infectious material” mean?* The term “other potentially infectious materials” is defined in the OSHA Bloodborne Pathogens standard at §1910.1030(b). These materials include:

(i) Human bodily fluids, tissues and organs, and

(ii) Other materials infected with the HIV or hepatitis B (HBV) virus such as laboratory cultures or tissues from experimental animals.

(2) *Does this mean that I must record all cuts, lacerations, punctures, and scratches?* No, you need to record cuts, lacerations, punctures, and scratches only if they are work-related and involve contamination with another person's blood or other potentially infectious material. If the cut, laceration, or scratch involves a clean object, or a contaminant other than blood or other potentially infectious material, you need to record the case only if it meets one or more of the recording criteria in §1904.7.

(3) *If I record an injury and the employee is later diagnosed with an infectious bloodborne disease, do I need to update the OSHA 300 Log?* Yes, you must update the classification of the case on the OSHA 300 Log if the case results in death, days away from work, restricted work, or job transfer. You must also update the description to identify the infectious disease and change the classification of the case from an injury to an illness.

(4) *What if one of my employees is splashed or exposed to blood or other potentially infectious material without being cut or scratched? Do I need to record this incident?* You need to record such an incident on the OSHA 300 Log as an illness if:

(i) It results in the diagnosis of a bloodborne illness, such as HIV, hepatitis B, or hepatitis C; or

(ii) It meets one or more of the recording criteria in §1904.7.

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§1904.9 Recording criteria for cases involving medical removal under OSHA standards.

(a) *Basic requirement.* If an employee is medically removed under the medical surveillance requirements of an OSHA standard, you must record the case on the OSHA 300 Log.

(b) *Implementation—(1) How do I classify medical removal cases on the OSHA 300 Log?* You must enter each medical removal case on the OSHA 300 Log as either a case involving days away from work or a case involving restricted work activity, depending on how you decide to comply with the medical removal requirement. If the medical removal is the result of a chemical exposure, you must enter the case on the OSHA 300 Log by checking the “poisoning” column.

(2) *Do all of OSHA's standards have medical removal provisions?* No, some OSHA standards, such as the standards covering bloodborne pathogens and noise, do not have medical removal provisions. Many OSHA standards that cover specific chemical substances have medical removal provisions. These standards include, but are not limited to, lead, cadmium, methylene chloride, formaldehyde, and benzene.

(3) *Do I have to record a case where I voluntarily removed the employee from exposure before the medical removal criteria in an OSHA standard are met?* No, if the case involves voluntary medical removal before the medical removal levels required by an OSHA standard, you do not need to record the case on the OSHA 300 Log.

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§1904.10 Recording criteria for cases involving occupational hearing loss.

(a) *Basic requirement.* If an employee's hearing test (audiogram) reveals that the employee has experienced a work-related Standard Threshold Shift (STS) in hearing in one or both ears, and the employee's total hearing level is 25 decibels (dB) or more above audiometric zero (averaged at 2000, 3000, and 4000 Hz) in the same ear(s) as the STS, you must record the case on the OSHA 300 Log.

(b) *Implementation—(1) What is a Standard Threshold Shift?* A Standard Threshold Shift, or STS, is defined in the occupational noise exposure standard at 29 CFR 1910.95(g)(10)(i) as a change in hearing threshold, relative to the baseline audiogram for that employee, of an average of 10 decibels (dB) or more at 2000, 3000, and 4000 hertz (Hz) in one or both ears.

(2) *How do I evaluate the current audiogram to determine whether an employee has an STS and a 25-dB hearing level?—(i) STS.* If the employee has never previously experienced a recordable hearing loss, you must compare the employee's current audiogram with that employee's baseline audiogram. If the employee has previously experienced a recordable hearing loss, you must compare the employee's current audiogram with the employee's revised baseline audiogram (the audiogram reflecting the employee's previous recordable hearing loss case).

(ii) *25-dB loss.* Audiometric test results reflect the employee's overall hearing ability in comparison to audiometric zero. Therefore, using the employee's current audiogram, you must use the average hearing level at 2000, 3000, and 4000 Hz to determine whether or not the employee's total hearing level is 25 dB or more.

(3) *May I adjust the current audiogram to reflect the effects of aging on hearing?* Yes. When you are determining whether an STS has occurred, you may age adjust the employee's current audiogram results by using Tables F-1 or F-2, as appropriate, in appendix F of 29 CFR 1910.95. You may not use an age adjustment when determining whether the employee's total hearing level is 25 dB or more above audiometric zero.

(4) *Do I have to record the hearing loss if I am going to retest the employee's hearing?* No, if you retest the employee's hearing within 30 days of the first test, and the retest does not confirm the recordable STS, you are not required to record the hearing loss case on the OSHA 300 Log. If the retest confirms the recordable STS, you must record the hearing loss illness within seven (7) calendar days of the retest. If subsequent audiometric testing performed under the testing requirements of the §1910.95 noise standard indicates that an STS is not persistent, you may erase or line-out the recorded entry.

(5) *Are there any special rules for determining whether a hearing loss case is work-related?* No. You must use the rules in §1904.5 to determine if the hearing loss is work-related. If an event or exposure in the work environment either caused or contributed to the hearing loss, or significantly aggravated a pre-existing hearing loss, you must consider the case to be work related.

(6) *If a physician or other licensed health care professional determines the hearing loss is not work-related, do I still need to record the case?* If a physician or other licensed health care professional determines, following the rules set out in §1904.5, that the hearing loss is not work-related or that occupational noise exposure did not significantly aggravate the hearing loss, you do not have to consider the case work-related or record the case on the OSHA 300 Log.

(7) *How do I complete the 300 Log for a hearing loss case?* When you enter a recordable hearing loss case on the OSHA 300 Log, you must check the 300 Log column for hearing loss.

(NOTE: §1904.10(b)(7) is effective beginning January 1, 2004.)

[67 FR 44047, July 1, 2002, as amended at 67 FR 77170, Dec. 17, 2002; 84 FR 21457, May 14, 2019]

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§1904.11 Recording criteria for work-related tuberculosis cases.

(a) *Basic requirement.* If any of your employees has been occupationally exposed to anyone with a known case of active tuberculosis (TB), and that employee subsequently develops a tuberculosis infection, as evidenced by a positive skin test or diagnosis by a physician or other licensed health care professional, you must record the case on the OSHA 300 Log by checking the “respiratory condition” column.

(b) *Implementation—*(1) *Do I have to record, on the Log, a positive TB skin test result obtained at a pre-employment physical?* No, you do not have to record it because the employee was not occupationally exposed to a known case of active tuberculosis in your workplace.

(2) *May I line-out or erase a recorded TB case if I obtain evidence that the case was not caused by occupational exposure?* Yes, you may line-out or erase the case from the Log under the following circumstances:

(i) The worker is living in a household with a person who has been diagnosed with active TB;

(ii) The Public Health Department has identified the worker as a contact of an individual with a case of active TB unrelated to the workplace; or

(iii) A medical investigation shows that the employee's infection was caused by exposure to TB away from work, or proves that the case was not related to the workplace TB exposure.

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§§1904.13-1904.28 [Reserved]

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§1904.29 Forms.

(a) *Basic requirement.* You must use OSHA 300, 300-A, and 301 forms, or equivalent forms, for recordable injuries and illnesses. The OSHA 300 form is called the Log of Work-Related Injuries and Illnesses, the 300-A is the Summary of Work-Related Injuries and Illnesses, and the OSHA 301 form is called the Injury and Illness Incident Report.

(b) *Implementation—*(1) *What do I need to do to complete the OSHA 300 Log?* You must enter information about your business at the top of the OSHA 300 Log, enter a one or two line description for each recordable injury or illness, and summarize this information on the OSHA 300-A at the end of the year.

(2) *What do I need to do to complete the OSHA 301 Incident Report?* You must complete an OSHA 301 Incident Report form, or an equivalent form, for each recordable injury or illness entered on the OSHA 300 Log.

(3) *How quickly must each injury or illness be recorded?* You must enter each recordable injury or illness on the OSHA 300 Log and 301 Incident Report within seven (7) calendar days of receiving information that a recordable injury or illness has occurred.

(4) *What is an equivalent form?* An equivalent form is one that has the same information, is as readable and understandable, and is completed using the same instructions as the OSHA form it replaces. Many employers use an insurance form instead of the OSHA 301 Incident Report, or supplement an insurance form by adding any additional information required by OSHA.

(5) *May I keep my records on a computer?* Yes, if the computer can produce equivalent forms when they are needed, as described under §§1904.35 and 1904.40, you may keep your records using the computer system.

(6) *Are there situations where I do not put the employee's name on the forms for privacy reasons?* Yes, if you have a “privacy concern case,” you may not enter the employee's name on the OSHA 300 Log. Instead, enter “privacy case” in the space normally used for the employee's name. This will protect the privacy of the injured or ill employee when another employee, a former employee, or an authorized employee representative is provided access to the OSHA 300 Log under §1904.35(b)(2). You must keep a separate, confidential list of the case numbers and employee names for your privacy concern cases so you can update the cases and provide the information to the government if asked to do so.

(7) *How do I determine if an injury or illness is a privacy concern case?* You must consider the following injuries or illnesses to be privacy concern cases:

- (i) An injury or illness to an intimate body part or the reproductive system;
- (ii) An injury or illness resulting from a sexual assault;
- (iii) Mental illnesses;
- (iv) HIV infection, hepatitis, or tuberculosis;
- (v) Needlestick injuries and cuts from sharp objects that are contaminated with another person's blood or other potentially infectious material (see §1904.8 for definitions); and
- (vi) Other illnesses, if the employee voluntarily requests that his or her name not be entered on the log.

(8) *May I classify any other types of injuries and illnesses as privacy concern cases?* No, this is a complete list of all injuries and illnesses considered privacy concern cases for part 1904 purposes.

(9) *If I have removed the employee's name, but still believe that the employee may be identified from the information on the forms, is there anything else that I can do to further protect the employee's privacy?* Yes, if you have a reasonable basis to believe that information describing the privacy concern case may be personally identifiable even though the employee's name has been omitted, you may use discretion in describing the injury or illness on both the OSHA 300 and 301 forms. You must enter enough information to identify the cause of the incident and the general severity of the injury or illness, but you do not need to include details of an intimate or private nature. For example, a sexual assault case could be described as "injury from assault," or an injury to a reproductive organ could be described as "lower abdominal injury."

(10) *What must I do to protect employee privacy if I wish to provide access to the OSHA Forms 300 and 301 to persons other than government representatives, employees, former employees or authorized representatives?* If you decide to voluntarily disclose the Forms to persons other than government representatives, employees, former employees or authorized representatives (as required by §§1904.35 and 1904.40), you must remove or hide the employees' names and other personally identifying information, except for the following cases. You may disclose the Forms with personally identifying information only:

- (i) to an auditor or consultant hired by the employer to evaluate the safety and health program;
- (ii) to the extent necessary for processing a claim for workers' compensation or other insurance benefits; or
- (iii) to a public health authority or law enforcement agency for uses and disclosures for which consent, an authorization, or opportunity to agree or object is not required under Department of Health and Human Services Standards for Privacy of Individually Identifiable Health Information, 45 CFR 164.512.

[66 FR 6122, Jan. 19, 2001, as amended at 66 FR 52034, Oct. 12, 2001; 67 FR 77170, Dec. 17, 2002; 68 FR 38607, June 30, 2003; 81 FR 91809, Dec. 19, 2016; 82 FR 20548, May 3, 2017]

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Subpart D—Other OSHA Injury and Illness Recordkeeping Requirements

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§1904.30 Multiple business establishments.

(a) *Basic requirement.* You must keep a separate OSHA 300 Log for each establishment that is expected to be in operation for one year or longer.

(b) *Implementation—(1) Do I need to keep OSHA injury and illness records for short-term establishments (i.e., establishments that will exist for less than a year)?* Yes, however, you do not have to keep a separate OSHA 300 Log for each such establishment. You may keep one OSHA 300 Log that covers all of your short-term establishments. You may also include the short-term establishments' recordable injuries and illnesses on an OSHA 300 Log that covers short-term establishments for individual company divisions or geographic regions.

(2) *May I keep the records for all of my establishments at my headquarters location or at some other central location?* Yes, you may keep the records for an establishment at your headquarters or other central location if you can:

(i) Transmit information about the injuries and illnesses from the establishment to the central location within seven (7) calendar days of receiving information that a recordable injury or illness has occurred; and

(ii) Produce and send the records from the central location to the establishment within the time frames required by §§1904.35 and 1904.40 when you are required to provide records to a government representative, employees, former employees or employee representatives.

(3) *Some of my employees work at several different locations or do not work at any of my establishments at all. How do I record cases for these employees?* You must link each of your employees with one of your establishments, for recordkeeping purposes. You must record the injury and illness on the OSHA 300 Log of the injured or ill employee's establishment, or on an OSHA 300 Log that covers that employee's short-term establishment.

(4) *How do I record an injury or illness when an employee of one of my establishments is injured or becomes ill while visiting or working at another of my establishments, or while working away from any of my establishments?* If the injury or illness occurs at one of your establishments, you must record the injury or illness on the OSHA 300 Log of the establishment at which the injury or illness occurred. If the employee is injured or becomes ill and is not at one of your establishments, you must record the case on the OSHA 300 Log at the establishment at which the employee normally works.

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§1904.31 Covered employees.

(a) *Basic requirement.* You must record on the OSHA 300 Log the recordable injuries and illnesses of all employees on your payroll, whether they are labor, executive, hourly, salary, part-time, seasonal, or migrant workers. You also must record the recordable injuries and illnesses that occur to employees who are not on your payroll if you supervise these employees on a day-to-day basis. If your business is organized as a sole proprietorship or partnership, the owner or partners are not considered employees for recordkeeping purposes.

(b) *Implementation—(1) If a self-employed person is injured or becomes ill while doing work at my business, do I need to record the injury or illness?* No, self-employed individuals are not covered by the OSH Act or this regulation.

(2) *If I obtain employees from a temporary help service, employee leasing service, or personnel supply service, do I have to record an injury or illness occurring to one of those employees?* You must record these injuries and illnesses if you supervise these employees on a day-to-day basis.

(3) *If an employee in my establishment is a contractor's employee, must I record an injury or illness occurring to that employee?* If the contractor's employee is under the day-to-day supervision of the contractor, the contractor is responsible for recording the injury or illness. If you supervise the contractor employee's work on a day-to-day basis, you must record the injury or illness.

(4) *Must the personnel supply service, temporary help service, employee leasing service, or contractor also record the injuries or illnesses occurring to temporary, leased or contract employees that I supervise on a day-to-day basis?* No, you and the temporary help service, employee leasing service, personnel supply service, or contractor should coordinate your efforts to make sure that each injury and illness is recorded only once: either on your OSHA 300 Log (if you provide day-to-day supervision) or on the other employer's OSHA 300 Log (if that company provides day-to-day supervision).

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§1904.32 Annual summary.

(a) *Basic requirement.* At the end of each calendar year, you must:

- (1) Review the OSHA 300 Log to verify that the entries are complete and accurate, and correct any deficiencies identified;
- (2) Create an annual summary of injuries and illnesses recorded on the OSHA 300 Log;
- (3) Certify the summary; and
- (4) Post the annual summary.

(b) *Implementation—(1) How extensively do I have to review the OSHA 300 Log entries at the end of the year?* You must review the entries as extensively as necessary to make sure that they are complete and correct.

(2) *How do I complete the annual summary?* You must:

- (i) Total the columns on the OSHA 300 Log (if you had no recordable cases, enter zeros for each column total); and
- (ii) Enter the calendar year covered, the company's name, establishment name, establishment address, annual average number of employees covered by the OSHA 300 Log, and the total hours worked by all employees covered by the OSHA 300

Log.

(iii) If you are using an equivalent form other than the OSHA 300-A summary form, as permitted under §1904.6(b)(4), the summary you use must also include the employee access and employer penalty statements found on the OSHA 300-A Summary form.

(3) *How do I certify the annual summary?* A company executive must certify that he or she has examined the OSHA 300 Log and that he or she reasonably believes, based on his or her knowledge of the process by which the information was recorded, that the annual summary is correct and complete.

(4) *Who is considered a company executive?* The company executive who certifies the log must be one of the following persons:

- (i) An owner of the company (only if the company is a sole proprietorship or partnership);
- (ii) An officer of the corporation;
- (iii) The highest ranking company official working at the establishment; or
- (iv) The immediate supervisor of the highest ranking company official working at the establishment.

(5) *How do I post the annual summary?* You must post a copy of the annual summary in each establishment in a conspicuous place or places where notices to employees are customarily posted. You must ensure that the posted annual summary is not altered, defaced or covered by other material.

(6) *When do I have to post the annual summary?* You must post the summary no later than February 1 of the year following the year covered by the records and keep the posting in place until April 30.

[66 FR 6122, Jan. 19, 2001, as amended at 81 FR 91810, Dec. 19, 2016; 82 FR 20548, May 3, 2017]

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§1904.33 Retention and updating.

(a) *Basic requirement.* You must save the OSHA 300 Log, the privacy case list (if one exists), the annual summary, and the OSHA 301 Incident Report forms for five (5) years following the end of the calendar year that these records cover.

(b) *Implementation—(1) Do I have to update the OSHA 300 Log during the five-year storage period?* Yes, during the storage period, you must update your stored OSHA 300 Logs to include newly discovered recordable injuries or illnesses and to show any changes that have occurred in the classification of previously recorded injuries and illnesses. If the description or outcome of a case changes, you must remove or line out the original entry and enter the new information.

(2) *Do I have to update the annual summary?* No, you are not required to update the annual summary, but you may do so if you wish.

(3) *Do I have to update the OSHA 301 Incident Reports?* No, you are not required to update the OSHA 301 Incident Reports, but you may do so if you wish.

[66 FR 6122, Jan. 19, 2001, as amended at 81 FR 91810, Dec. 19, 2016; 82 FR 20548, May 3, 2017]

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§1904.34 Change in business ownership.

If your business changes ownership, you are responsible for recording and reporting work-related injuries and illnesses only for that period of the year during which you owned the establishment. You must transfer the part 1904 records to the new owner. The new owner must save all records of the establishment kept by the prior owner, as required by §1904.33 of this part, but need not update or correct the records of the prior owner.

[82 FR 20549, May 3, 2017]

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§1904.35 Employee involvement.

(a) *Basic requirement.* Your employees and their representatives must be involved in the recordkeeping system in several ways.

(1) You must inform each employee of how he or she is to report a work-related injury or illness to you.

(2) You must provide employees with the information described in paragraph (b)(1)(iii) of this section.

(3) You must provide access to your injury and illness records for your employees and their representatives as described in paragraph (b)(2) of this section.

(b) *Implementation*—(1) *What must I do to make sure that employees report work-related injuries and illnesses to me?* (i)

You must establish a reasonable procedure for employees to report work-related injuries and illnesses promptly and accurately. A procedure is not reasonable if it would deter or discourage a reasonable employee from accurately reporting a workplace injury or illness;

(ii) You must inform each employee of your procedure for reporting work-related injuries and illnesses;

(iii) You must inform each employee that:

(A) Employees have the right to report work-related injuries and illnesses; and

(B) Employers are prohibited from discharging or in any manner discriminating against employees for reporting work-related injuries or illnesses; and

(iv) You must not discharge or in any manner discriminate against any employee for reporting a work-related injury or illness.

(2) *Do I have to give my employees and their representatives access to the OSHA injury and illness records?* Yes, your employees, former employees, their personal representatives, and their authorized employee representatives have the right to access the OSHA injury and illness records, with some limitations, as discussed below.

(i) *Who is an authorized employee representative?* An authorized employee representative is an authorized collective bargaining agent of employees.

(ii) *Who is a “personal representative” of an employee or former employee?* A personal representative is:

(A) Any person that the employee or former employee designates as such, in writing; or

(B) The legal representative of a deceased or legally incapacitated employee or former employee.

(iii) *If an employee or representative asks for access to the OSHA 300 Log, when do I have to provide it?* When an employee, former employee, personal representative, or authorized employee representative asks for copies of your current or stored OSHA 300 Log(s) for an establishment the employee or former employee has worked in, you must give the requester a copy of the relevant OSHA 300 Log(s) by the end of the next business day.

(iv) *May I remove the names of the employees or any other information from the OSHA 300 Log before I give copies to an employee, former employee, or employee representative?* No, you must leave the names on the 300 Log. However, to protect the privacy of injured and ill employees, you may not record the employee's name on the OSHA 300 Log for certain “privacy concern cases,” as specified in §1904.29(b)(6) through (9).

(v) *If an employee or representative asks for access to the OSHA 301 Incident Report, when do I have to provide it?* (A) When an employee, former employee, or personal representative asks for a copy of the OSHA 301 Incident Report describing an injury or illness to that employee or former employee, you must give the requester a copy of the OSHA 301 Incident Report containing that information by the end of the next business day.

(B) When an authorized employee representative asks for copies of the OSHA 301 Incident Reports for an establishment where the agent represents employees under a collective bargaining agreement, you must give copies of those forms to the authorized employee representative within 7 calendar days. You are only required to give the authorized employee representative information from the OSHA 301 Incident Report section titled “Tell us about the case.” You must remove all other information from the copy of the OSHA 301 Incident Report or the equivalent substitute form that you give to the authorized employee representative.

(vi) *May I charge for the copies?* No, you may not charge for these copies the first time they are provided. However, if one of the designated persons asks for additional copies, you may assess a reasonable charge for retrieving and copying the records.

[81 FR 29691, May 12, 2016; 81 FR 31854, May 20, 2016, as amended at 81 FR 91810, Dec. 19, 2016; 82 FR 20549, May 3, 2017]

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§1904.36 Prohibition against discrimination.

In addition to §1904.35, section 11(c) of the OSH Act also prohibits you from discriminating against an employee for reporting a work-related fatality, injury, or illness. That provision of the Act also protects the employee who files a safety and health complaint, asks for access to the part 1904 records, or otherwise exercises any rights afforded by the OSH Act.

[81 FR 29692, May 12, 2016]

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§1904.37 State recordkeeping regulations.

(a) *Basic requirement.* Some States operate their own OSHA programs, under the authority of a State plan as approved by OSHA. States operating OSHA-approved State plans must have occupational injury and illness recording and reporting requirements that are substantially identical to the requirements in this part (see 29 CFR 1902.3(j), 29 CFR 1902.7, and 29 CFR 1956.10(i)).

(b) *Implementation.* (1) State-Plan States must have the same requirements as Federal OSHA for determining which injuries and illnesses are recordable and how they are recorded.

(2) For other part 1904 provisions (for example, industry exemptions, reporting of fatalities and hospitalizations, record retention, or employee involvement), State-Plan State requirements may be more stringent than or supplemental to the Federal requirements, but because of the unique nature of the national recordkeeping program, States must consult with and obtain approval of any such requirements.

(3) Although State and local government employees are not covered Federally, all State-Plan States must provide coverage, and must develop injury and illness statistics, for these workers. State Plan recording and reporting requirements for State and local government entities may differ from those for the private sector but must meet the requirements of paragraphs 1904.37(b)(1) and (b)(2).

(4) A State-Plan State may not issue a variance to a private sector employer and must recognize all variances issued by Federal OSHA.

(5) A State Plan State may only grant an injury and illness recording and reporting variance to a State or local government employer within the State after obtaining approval to grant the variance from Federal OSHA.

[66 FR 6122, Jan. 19, 2001, as amended at 80 FR 49904, Aug. 18, 2015]

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§1904.38 Variances from the recordkeeping rule.

(a) *Basic requirement.* If you wish to keep records in a different manner from the manner prescribed by the part 1904 regulations, you may submit a variance petition to the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, Washington, DC 20210. You can obtain a variance only if you can show that your alternative recordkeeping system:

- (1) Collects the same information as this part requires;
- (2) Meets the purposes of the Act; and
- (3) Does not interfere with the administration of the Act.

(b) *Implementation*—(1) *What do I need to include in my variance petition?* You must include the following items in your petition:

- (i) Your name and address;
- (ii) A list of the State(s) where the variance would be used;
- (iii) The address(es) of the business establishment(s) involved;
- (iv) A description of why you are seeking a variance;
- (v) A description of the different recordkeeping procedures you propose to use;

(vi) A description of how your proposed procedures will collect the same information as would be collected by this part and achieve the purpose of the Act; and

(vii) A statement that you have informed your employees of the petition by giving them or their authorized representative a copy of the petition and by posting a statement summarizing the petition in the same way as notices are posted under §1903.2(a).

(2) *How will the Assistant Secretary handle my variance petition?* The Assistant Secretary will take the following steps to process your variance petition.

(i) The Assistant Secretary will offer your employees and their authorized representatives an opportunity to submit written data, views, and arguments about your variance petition.

(ii) The Assistant Secretary may allow the public to comment on your variance petition by publishing the petition in the FEDERAL REGISTER. If the petition is published, the notice will establish a public comment period and may include a schedule for a public meeting on the petition.

(iii) After reviewing your variance petition and any comments from your employees and the public, the Assistant Secretary will decide whether or not your proposed recordkeeping procedures will meet the purposes of the Act, will not otherwise interfere with the Act, and will provide the same information as the part 1904 regulations provide. If your procedures meet these criteria, the Assistant Secretary may grant the variance subject to such conditions as he or she finds appropriate.

(iv) If the Assistant Secretary grants your variance petition, OSHA will publish a notice in the FEDERAL REGISTER to announce the variance. The notice will include the practices the variance allows you to use, any conditions that apply, and the reasons for allowing the variance.

(3) *If I apply for a variance, may I use my proposed recordkeeping procedures while the Assistant Secretary is processing the variance petition?* No, alternative recordkeeping practices are only allowed after the variance is approved. You must comply with the part 1904 regulations while the Assistant Secretary is reviewing your variance petition.

(4) *If I have already been cited by OSHA for not following the part 1904 regulations, will my variance petition have any effect on the citation and penalty?* No, in addition, the Assistant Secretary may elect not to review your variance petition if it includes an element for which you have been cited and the citation is still under review by a court, an Administrative Law Judge (ALJ), or the OSH Review Commission.

(5) *If I receive a variance, may the Assistant Secretary revoke the variance at a later date?* Yes, the Assistant Secretary may revoke your variance if he or she has good cause. The procedures revoking a variance will follow the same process as OSHA uses for reviewing variance petitions, as outlined in paragraph 1904.38(b)(2). Except in cases of willfulness or where necessary for public safety, the Assistant Secretary will:

(i) Notify you in writing of the facts or conduct that may warrant revocation of your variance; and

(ii) Provide you, your employees, and authorized employee representatives with an opportunity to participate in the revocation procedures.

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Subpart E—Reporting Fatality, Injury and Illness Information to the Government

AUTHORITY: 29 U.S.C. 657, 673, 5 U.S.C. 553, and Secretary of Labor's Order 1-2012 (77 FR 3912, Jan. 25, 2012).

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§1904.39 Reporting fatalities, hospitalizations, amputations, and losses of an eye as a result of work-related incidents to OSHA.

(a) *Basic requirement.* (1) Within eight (8) hours after the death of any employee as a result of a work-related incident, you must report the fatality to the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

(2) Within twenty-four (24) hours after the in-patient hospitalization of one or more employees or an employee's amputation or an employee's loss of an eye, as a result of a work-related incident, you must report the in-patient hospitalization, amputation, or loss of an eye to OSHA.

(3) You must report the fatality, in-patient hospitalization, amputation, or loss of an eye using one of the following methods:

(i) By telephone or in person to the OSHA Area Office that is nearest to the site of the incident.

- (ii) By telephone to the OSHA toll-free central telephone number, 1-800-321-OSHA (1-800-321-6742).
- (iii) By electronic submission using the reporting application located on OSHA's public Web site at www.osha.gov.

(b) *Implementation*—(1) *If the Area Office is closed, may I report the fatality, in-patient hospitalization, amputation, or loss of an eye by leaving a message on OSHA's answering machine, faxing the Area Office, or sending an email?* No, if the Area Office is closed, you must report the fatality, in-patient hospitalization, amputation, or loss of an eye using either the 800 number or the reporting application located on OSHA's public Web site at www.osha.gov.

(2) *What information do I need to give to OSHA about the in-patient hospitalization, amputation, or loss of an eye?* You must give OSHA the following information for each fatality, in-patient hospitalization, amputation, or loss of an eye:

- (i) The establishment name;
- (ii) The location of the work-related incident;
- (iii) The time of the work-related incident;
- (iv) The type of reportable event (*i.e.*, fatality, in-patient hospitalization, amputation, or loss of an eye);
- (v) The number of employees who suffered a fatality, in-patient hospitalization, amputation, or loss of an eye;
- (vi) The names of the employees who suffered a fatality, in-patient hospitalization, amputation, or loss of an eye;
- (vii) Your contact person and his or her phone number; and
- (viii) A brief description of the work-related incident.

(3) *Do I have to report the fatality, in-patient hospitalization, amputation, or loss of an eye if it resulted from a motor vehicle accident on a public street or highway?* If the motor vehicle accident occurred in a construction work zone, you must report the fatality, in-patient hospitalization, amputation, or loss of an eye. If the motor vehicle accident occurred on a public street or highway, but not in a construction work zone, you do not have to report the fatality, in-patient hospitalization, amputation, or loss of an eye to OSHA. However, the fatality, in-patient hospitalization, amputation, or loss of an eye must be recorded on your OSHA injury and illness records, if you are required to keep such records.

(4) *Do I have to report the fatality, in-patient hospitalization, amputation, or loss of an eye if it occurred on a commercial or public transportation system?* No, you do not have to report the fatality, in-patient hospitalization, amputation, or loss of an eye to OSHA if it occurred on a commercial or public transportation system (*e.g.*, airplane, train, subway, or bus). However, the fatality, in-patient hospitalization, amputation, or loss of an eye must be recorded on your OSHA injury and illness records, if you are required to keep such records.

(5) *Do I have to report a work-related fatality or in-patient hospitalization caused by a heart attack?* Yes, your local OSHA Area Office director will decide whether to investigate the event, depending on the circumstances of the heart attack.

(6) *What if the fatality, in-patient hospitalization, amputation, or loss of an eye does not occur during or right after the work-related incident?* You must only report a fatality to OSHA if the fatality occurs within thirty (30) days of the work-related incident. For an in-patient hospitalization, amputation, or loss of an eye, you must only report the event to OSHA if it occurs within twenty-four (24) hours of the work-related incident. However, the fatality, in-patient hospitalization, amputation, or loss of an eye must be recorded on your OSHA injury and illness records, if you are required to keep such records.

(7) *What if I don't learn about a reportable fatality, in-patient hospitalization, amputation, or loss of an eye right away?* If you do not learn about a reportable fatality, in-patient hospitalization, amputation, or loss of an eye at the time it takes place, you must make the report to OSHA within the following time period after the fatality, in-patient hospitalization, amputation, or loss of an eye is reported to you or to any of your agent(s): Eight (8) hours for a fatality, and twenty-four (24) hours for an in-patient hospitalization, an amputation, or a loss of an eye.

(8) *What if I don't learn right away that the reportable fatality, in-patient hospitalization, amputation, or loss of an eye was the result of a work-related incident?* If you do not learn right away that the reportable fatality, in-patient hospitalization, amputation, or loss of an eye was the result of a work-related incident, you must make the report to OSHA within the following time period after you or any of your agent(s) learn that the reportable fatality, in-patient hospitalization, amputation, or loss of an eye was the result of a work-related incident: Eight (8) hours for a fatality, and twenty-four (24) hours for an in-patient hospitalization, an amputation, or a loss of an eye.

(9) *How does OSHA define "in-patient hospitalization"?* OSHA defines in-patient hospitalization as a formal admission to the in-patient service of a hospital or clinic for care or treatment.

(10) *Do I have to report an in-patient hospitalization that involves only observation or diagnostic testing?* No, you do not have to report an in-patient hospitalization that involves only observation or diagnostic testing. You must only report to OSHA each in-patient hospitalization that involves care or treatment.

(11) *How does OSHA define “amputation”?* An amputation is the traumatic loss of a limb or other external body part. Amputations include a part, such as a limb or appendage, that has been severed, cut off, amputated (either completely or partially); fingertip amputations with or without bone loss; medical amputations resulting from irreparable damage; amputations of body parts that have since been reattached. Amputations do not include avulsions, enucleations, degloving, scalpings, severed ears, or broken or chipped teeth.

[79 FR 56187, Sept. 18, 2014]

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§1904.40 Providing records to government representatives.

(a) *Basic requirement.* When an authorized government representative asks for the records you keep under part 1904, you must provide copies of the records within four (4) business hours.

(b) *Implementation—(1) What government representatives have the right to get copies of my part 1904 records?* The government representatives authorized to receive the records are:

- (i) A representative of the Secretary of Labor conducting an inspection or investigation under the Act;
- (ii) A representative of the Secretary of Health and Human Services (including the National Institute for Occupational Safety and Health—NIOSH) conducting an investigation under section 20(b) of the Act, or
- (iii) A representative of a State agency responsible for administering a State plan approved under section 18 of the Act.

(2) *Do I have to produce the records within four (4) hours if my records are kept at a location in a different time zone?* OSHA will consider your response to be timely if you give the records to the government representative within four (4) business hours of the request. If you maintain the records at a location in a different time zone, you may use the business hours of the establishment at which the records are located when calculating the deadline.

[66 FR 6122, Jan. 19, 2001, as amended at 81 FR 91810, Dec. 19, 2016; 82 FR 20549, May 3, 2017]

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§1904.41 Electronic submission of Employer Identification Number (EIN) and injury and illness records to OSHA.

(a) *Basic requirements—(1) Annual electronic submission of OSHA Form 300A Summary of Work-Related Injuries and Illnesses by establishments with 250 or more employees.* If your establishment had 250 or more employees at any time during the previous calendar year, and this part requires your establishment to keep records, then you must electronically submit information from OSHA Form 300A Summary of Work-Related Injuries and Illnesses to OSHA or OSHA's designee. You must submit the information once a year, no later than the date listed in paragraph (c) of this section of the year after the calendar year covered by the form (for example, 2019 for the 2018 form).

(2) *Annual electronic submission of OSHA Form 300A Summary of Work-Related Injuries and Illnesses by establishments with 20 or more employees but fewer than 250 employees in designated industries.* If your establishment had 20 or more employees but fewer than 250 employees at any time during the previous calendar year, and your establishment is classified in an industry listed in appendix A to subpart E of this part, then you must electronically submit information from OSHA Form 300A Summary of Work-Related Injuries and Illnesses to OSHA or OSHA's designee. You must submit the information once a year, no later than the date listed in paragraph (c) of this section of the year after the calendar year covered by the form.

(3) *Electronic submission of part 1904 records upon notification.* Upon notification, you must electronically submit the requested information from your part 1904 records to OSHA or OSHA's designee.

(4) *Electronic submission of the Employer Identification Number (EIN).* For each establishment that is subject to these reporting requirements, you must provide the EIN used by the establishment.

(b) *Implementation—(1) Does every employer have to routinely submit this information to OSHA?* No, only two categories of employers must routinely submit this information. First, if your establishment had 250 or more employees at any time during the previous calendar year, and this part requires your establishment to keep records, then you must submit the required information to OSHA once a year. Second, if your establishment had 20 or more employees but fewer than 250 employees at any time during the previous calendar year, and your establishment is classified in an industry listed in appendix A to this subpart, then you must submit the required information to OSHA once a year. Employers in these two categories must submit

the required information by the date listed in paragraph (c) of this section of the year after the calendar year covered by the form (for example, 2019 for the 2018 form). If you are not in either of these two categories, then you must submit the information to OSHA only if OSHA notifies you to do so for an individual data collection.

(2) *Do part-time, seasonal, or temporary workers count as employees in the criteria for number of employees in paragraph (a) of this section?* Yes, each individual employed in the establishment at any time during the calendar year counts as one employee, including full-time, part-time, seasonal, and temporary workers.

(3) *How will OSHA notify me that I must submit information as part of an individual data collection under paragraph (a)(3) of this section?* OSHA will notify you by mail if you will have to submit information as part of an individual data collection under paragraph (a)(3). OSHA will also announce individual data collections through publication in the FEDERAL REGISTER and the OSHA newsletter, and announcements on the OSHA website. If you are an employer who must routinely submit the information, then OSHA will not notify you about your routine submittal.

(4) *When do I have to submit the information?* If you are required to submit information under paragraph (a)(1) or (2) of this section, then you must submit the information once a year, by the date listed in paragraph (c) of this section of the year after the calendar year covered by the form (for example, 2019 for the 2018 form). If you are submitting information because OSHA notified you to submit information as part of an individual data collection under paragraph (a)(3) of this section, then you must submit the information as specified in the notification.

(5) *How do I submit the information?* You must submit the information electronically. OSHA will provide a secure website for the electronic submission of information. For individual data collections under paragraph (a)(3) of this section, OSHA will include the website's location in the notification for the data collection.

(6) *Do I have to submit information if my establishment is partially exempt from keeping OSHA injury and illness records?* If you are partially exempt from keeping injury and illness records under §§1904.1 and/or 1904.2, then you do not have to routinely submit information under paragraphs (a)(1) and (2) of this section. You will have to submit information under paragraph (a)(3) of this section if OSHA informs you in writing that it will collect injury and illness information from you. If you receive such a notification, then you must keep the injury and illness records required by this part and submit information as directed.

(7) *Do I have to submit information if I am located in a State Plan State?* Yes, the requirements apply to employers located in State Plan States.

(8) *May an enterprise or corporate office electronically submit information for its establishment(s)?* Yes, if your enterprise or corporate office had ownership of or control over one or more establishments required to submit information under paragraph (a) of this section, then the enterprise or corporate office may collect and electronically submit the information for the establishment(s).

(c) *Reporting dates.* (1) In 2017 and 2018, establishments required to submit under paragraph (a)(1) or (2) of this section must submit the required information according to the table in this paragraph (c)(1):

Submission year	Establishments submitting under paragraph (a)(1) of this section must submit the required information from this form/these forms:	Establishments submitting under paragraph (a)(2) of this section must submit the required information from this form:	Submission deadline
2017	300A	300A	December 15, 2017.
2018	300A, 300, 301	300A	July 1, 2018.

(2) Beginning in 2019, establishments that are required to submit under paragraph (a)(1) or (2) of this section will have to submit all of the required information by March 2 of the year after the calendar year covered by the form or forms (for example, by March 2, 2019, for the forms covering 2018).

[81 FR 29692, May 12, 2016, as amended at 82 FR 55765, Nov. 24, 2017; 84 FR 405, Jan. 25, 2019]

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§1904.42 Requests from the Bureau of Labor Statistics for data.

(a) *Basic requirement.* If you receive a Survey of Occupational Injuries and Illnesses Form from the Bureau of Labor Statistics (BLS), or a BLS designee, you must promptly complete the form and return it following the instructions contained on the survey form.

(b) *Implementation—(1) Does every employer have to send data to the BLS?* No, each year, the BLS sends injury and illness survey forms to randomly selected employers and uses the information to create the Nation's occupational injury and illness statistics. In any year, some employers will receive a BLS survey form and others will not. You do not have to send injury and illness data to the BLS unless you receive a survey form.

(2) *If I get a survey form from the BLS, what do I have to do?* If you receive a Survey of Occupational Injuries and Illnesses Form from the Bureau of Labor Statistics (BLS), or a BLS designee, you must promptly complete the form and return it, following the instructions contained on the survey form.

(3) *Do I have to respond to a BLS survey form if I am normally exempt from keeping OSHA injury and illness records?* Yes, even if you are exempt from keeping injury and illness records under §1904.1 to §1904.3, the BLS may inform you in writing that it will be collecting injury and illness information from you in the coming year. If you receive such a letter, you must keep the injury and illness records required by §1904.5 to §1904.15 and make a survey report for the year covered by the survey.

(4) *Do I have to answer the BLS survey form if I am located in a State-Plan State?* Yes, all employers who receive a survey form must respond to the survey, even those in State-Plan States.

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Appendix A to Subpart E of Part 1904—Designated Industries for §1904.41(a)(2) Annual Electronic Submission of OSHA Form 300A Summary of Work-Related Injuries and Illnesses by Establishments With 20 or More Employees but Fewer Than 250 Employees in Designated Industries

NAICS	Industry
11	Agriculture, forestry, fishing and hunting.
22	Utilities.
23	Construction.
31-33	Manufacturing.
42	Wholesale trade.
4413	Automotive parts, accessories, and tire stores.
4421	Furniture stores.
4422	Home furnishings stores.
4441	Building material and supplies dealers.
4442	Lawn and garden equipment and supplies stores.
4451	Grocery stores.
4452	Specialty food stores.
4521	Department stores.
4529	Other general merchandise stores.
4533	Used merchandise stores.
4542	Vending machine operators.
4543	Direct selling establishments.
4811	Scheduled air transportation.
4841	General freight trucking.
4842	Specialized freight trucking.
4851	Urban transit systems.
4852	Interurban and rural bus transportation.
4853	Taxi and limousine service.
4854	School and employee bus transportation.
4855	Charter bus industry.
4859	Other transit and ground passenger transportation.
4871	Scenic and sightseeing transportation, land.
4881	Support activities for air transportation.
4882	Support activities for rail transportation.
4883	Support activities for water transportation.
4884	Support activities for road transportation.
4889	Other support activities for transportation.
4911	Postal service.
4921	Couriers and express delivery services.
4922	Local messengers and local delivery.
4931	Warehousing and storage.
5152	Cable and other subscription programming.
5311	Lessors of real estate.
5321	Automotive equipment rental and leasing.
5322	Consumer goods rental.
5323	General rental centers.
5617	Services to buildings and dwellings.
5621	Waste collection.
5622	Waste treatment and disposal.
5629	Remediation and other waste management services.
6219	Other ambulatory health care services.
6221	General medical and surgical hospitals.
6222	Psychiatric and substance abuse hospitals.
6223	Specialty (except psychiatric and substance abuse) hospitals.
6231	Nursing care facilities.
6232	Residential mental retardation, mental health and substance abuse facilities.
6233	Community care facilities for the elderly.

6239	Other residential care facilities.
6242	Community food and housing, and emergency and other relief services.
6243	Vocational rehabilitation services.
7111	Performing arts companies.
7112	Spectator sports.
7121	Museums, historical sites, and similar institutions.
7131	Amusement parks and arcades.
7132	Gambling industries.
7211	Traveler accommodation.
7212	RV (recreational vehicle) parks and recreational camps.
7213	Rooming and boarding houses.
7223	Special food services.
8113	Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance.
8123	Dry-cleaning and laundry services.

[81 FR 29693, May 12, 2016]

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Subpart F—Transition From the Former Rule

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§1904.43 Summary and posting of the 2001 data.

(a) *Basic requirement.* If you were required to keep OSHA 200 Logs in 2001, you must post a 2000 annual summary from the OSHA 200 Log of occupational injuries and illnesses for each establishment.

(b) *Implementation*—(1) *What do I have to include in the summary?* (i) You must include a copy of the totals from the 2001 OSHA 200 Log and the following information from that form:

- (A) The calendar year covered;
- (B) Your company name;
- (C) The name and address of the establishment; and
- (D) The certification signature, title and date.

(ii) If no injuries or illnesses occurred at your establishment in 2001, you must enter zeros on the totals line and post the 2001 summary.

(2) *When am I required to summarize and post the 2001 information?* (i) You must complete the summary by February 1, 2002; and

(ii) You must post a copy of the summary in each establishment in a conspicuous place or places where notices to employees are customarily posted. You must ensure that the summary is not altered, defaced or covered by other material.

- (3) You must post the 2001 summary from February 1, 2002 to March 1, 2002.

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§1904.44 Retention and updating of old forms.

You must save your copies of the OSHA 200 and 101 forms for five years following the year to which they relate and continue to provide access to the data as though these forms were the OSHA 300 and 301 forms. You are not required to update your old 200 and 101 forms.

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§1904.45 OMB control numbers under the Paperwork Reduction Act

The following sections each contain a collection of information requirement which has been approved by the Office of Management and Budget under the control number listed

29 CFR citation	OMB Control No.
1904.4-35	1218-0176
1904.39-41	1218-0176
1904.42	1220-0045

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Subpart G—Definitions

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§1904.46 Definitions.

The Act. The Act means the Occupational Safety and Health Act of 1970 (29 U.S.C. 651 *et seq.*). The definitions contained in section 3 of the Act (29 U.S.C. 652) and related interpretations apply to such terms when used in this part 1904.

Establishment. An establishment is a single physical location where business is conducted or where services or industrial operations are performed. For activities where employees do not work at a single physical location, such as construction; transportation; communications, electric, gas and sanitary services; and similar operations, the establishment is represented by main or branch offices, terminals, stations, etc. that either supervise such activities or are the base from which personnel carry out these activities.

(1) *Can one business location include two or more establishments?* Normally, one business location has only one establishment. Under limited conditions, the employer may consider two or more separate businesses that share a single location to be separate establishments. An employer may divide one location into two or more establishments only when:

(i) Each of the establishments represents a distinctly separate business;

(ii) Each business is engaged in a different economic activity;

(iii) No one industry description in the Standard Industrial Classification Manual (1987) applies to the joint activities of the establishments; and

(iv) Separate reports are routinely prepared for each establishment on the number of employees, their wages and salaries, sales or receipts, and other business information. For example, if an employer operates a construction company at the same location as a lumber yard, the employer may consider each business to be a separate establishment.

(2) *Can an establishment include more than one physical location?* Yes, but only under certain conditions. An employer may combine two or more physical locations into a single establishment only when:

(i) The employer operates the locations as a single business operation under common management;

(ii) The locations are all located in close proximity to each other; and

(iii) The employer keeps one set of business records for the locations, such as records on the number of employees, their wages and salaries, sales or receipts, and other kinds of business information. For example, one manufacturing establishment might include the main plant, a warehouse a few blocks away, and an administrative services building across the street.

(3) *If an employee telecommutes from home, is his or her home considered a separate establishment?* No, for employees who telecommute from home, the employee's home is not a business establishment and a separate 300 Log is not required. Employees who telecommute must be linked to one of your establishments under §1904.30(b)(3).

Injury or illness. An injury or illness is an abnormal condition or disorder. Injuries include cases such as, but not limited to, a cut, fracture, sprain, or amputation. Illnesses include both acute and chronic illnesses, such as, but not limited to, a skin disease, respiratory disorder, or poisoning. (Note: Injuries and illnesses are recordable only if they are new, work-related cases that meet one or more of the part 1904 recording criteria.)

Physician or Other Licensed Health Care Professional. A physician or other licensed health care professional is an individual whose legally permitted scope of practice (*i.e.*, license, registration, or certification) allows him or her to independently perform, or be delegated the responsibility to perform, the activities described by this regulation.

You. "You" means an employer as defined in section 3 of the Occupational Safety and Health Act of 1970 (29 U.S.C. 652).

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Need assistance?

By Standard Number / 1904 Subpart B App A - Partially Exempt Industries

- **Part Number:** 1904
- **Part Number Title:** Recording and Reporting Occupational Injuries and Illness.
- **Subpart:** 1904 Subpart B
- **Subpart Title:** Scope
- **Standard Number:** 1904 Subpart B App A
- **Title:** Partially Exempt Industries
- **GPO Source:** e-CFR

Non-Mandatory Appendix A to Subpart B -- Partially Exempt Industries

Employers are not required to keep OSHA injury and illness records for any establishment classified in the following North American Industry Classification System (NAICS) codes, unless they are asked in writing to do so by OSHA, the Bureau of Labor Statistics (BLS), or a state agency operating under the authority of OSHA or the BLS. All employers, including those partially exempted by reason of company size or industry classification, must report to OSHA any employee's fatality, in-patient hospitalization, amputation, or loss of an eye (see § 1904.39).

NAICS Code	Industry
4412	Other Motor Vehicle Dealers.
4431	Electronics and Appliance Stores.
4461	Health and Personal Care Stores.
4471	Gasoline Stations.
4481	Clothing Stores.
4482	Shoe Stores.
4483	Jewelry, Luggage, and Leather Goods Stores.
4511	Sporting Goods, Hobby, and Musical Instrument Stores.
4512	Book, Periodical, and Music Stores.
4531	Florists.
4532	Office Supplies, Stationery, and Gift Stores.
4812	Nonscheduled Air Transportation.
4861	Pipeline Transportation of Crude Oil.
4862	Pipeline Transportation of Natural Gas.
4869	Other Pipeline Transportation.
4879	Scenic and Sightseeing Transportation, Other.

NAICS Code	Industry
4885	Freight Transportation Arrangement.
5111	Newspaper, Periodical, Book, and Directory Publishers.
5112	Software Publishers.
5121	Motion Picture and Video Industries.
5122	Sound Recording Industries.
5151	Radio and Television Broadcasting.
5172	Wireless Telecommunications Carriers (except Satellite).
5173	Telecommunications Resellers.
5179	Other Telecommunications.
5181	Internet Service Providers and Web Search Portals.
5182	Data Processing, Hosting, and Related Services.
5191	Other Information Services.
5211	Monetary Authorities—Central Bank.
5221	Depository Credit Intermediation.
5222	Nondepository Credit Intermediation.
5223	Activities Related to Credit Intermediation.
5231	Securities and Commodity Contracts Intermediation and Brokerage.
5232	Securities and Commodity Exchanges.
5239	Other Financial Investment Activities.
5241	Insurance Carriers.
5242	Agencies, Brokerages, and Other Insurance Related Activities.
5251	Insurance and Employee Benefit Funds.
5259	Other Investment Pools and Funds.
5312	Offices of Real Estate Agents and Brokers.
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works).
5411	Legal Services.
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services.
5413	Architectural, Engineering, and Related Services.
5414	Specialized Design Services.

NAICS Code	Industry
5415	Computer Systems Design and Related Services
5416	Management, Scientific, and Technical Consulting Services.
5417	Scientific Research and Development Services.
5418	Advertising and Related Services.
5511	Management of Companies and Enterprises.
5611	Office Administrative Services.
5614	Business Support Services.
5615	Travel Arrangement and Reservation Services.
5616	Investigation and Security Services.
6111	Elementary and Secondary Schools.
6112	Junior Colleges.
6113	Colleges, Universities, and Professional Schools.
6114	Business Schools and Computer and Management Training.
6115	Technical and Trade Schools.
6116	Other Schools and Instruction.
6117	Educational Support Services.
6211	Offices of Physicians.
6212	Offices of Dentists.
6213	Offices of Other Health Practitioners.
6214	Outpatient Care Centers.
6215	Medical and Diagnostic Laboratories.
6244	Child Day Care Services.
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures.
7115	Independent Artists, Writers, and Performers.
7213	Rooming and Boarding Houses.
7221	Full-Service Restaurants.
7222	Limited-Service Eating Places.
7224	Drinking Places (Alcoholic Beverages).
8112	Electronic and Precision Equipment Repair and Maintenance.

NAICS Code	Industry
8114	Personal and Household Goods Repair and Maintenance.
8121	Personal Care Services.
8122	Death Care Services.
8131	Religious Organizations.
8132	Grantmaking and Giving Services.
8133	Social Advocacy Organizations.
8134	Civic and Social Organizations.
8139	Business, Professional, Labor, Political, and Similar Organizations

[66 FR 6122, Jan. 19, 2001; 79 FR 56186-56187, September 18, 2014]

UNITED STATES DEPARTMENT OF LABOR

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OCCUPATIONAL SAFETY & HEALTH

Frequently Asked

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Code of Ethics

This code sets forth the code of ethics and professional standards to be observed by holders of documents of certification conferred by the Board of Certified Safety Professionals.

Certificants shall, in their professional activities, sustain and advance the integrity, honor, and prestige of the profession by adherence to these standards:

1. **HOLD** paramount the safety and health of people, the protection of the environment and protection of property in the performance of professional duties, and exercise their obligation to advise employers, clients, employees, the public, and appropriate authorities of danger and unacceptable risks to people, the environment, or property.
2. **BE** honest, fair, and impartial; act with responsibility and integrity. Adhere to high standards of ethical conduct with balanced care for the interests of the public, employers, clients, employees, colleagues, and the profession. Avoid all conduct or practice that is likely to discredit the profession or deceive the public.
3. **ISSUE** public statements only in an objective and truthful manner and only when founded upon knowledge of the facts and competence in the subject matter.
4. **UNDERTAKE** assignments only when qualified by education or experience in the specific technical fields involved. Accept responsibility for their continued professional development by acquiring and maintaining competence through continuing education, experience, professional training, and keeping current on relevant legal issues.
5. **AVOID** deceptive acts that falsify or misrepresent their academic or professional qualifications. Not misrepresent or exaggerate their degree of responsibility in or for the subject matter of prior assignments. Presentations incident to the solicitation of employment shall not misrepresent pertinent facts concerning employers, employees, associates, or past accomplishments with the intent and purpose of enhancing their qualifications and their work.
6. **CONDUCT** their professional relations by the highest standards of integrity and avoid compromise of their professional judgment by conflicts of interest. When becoming aware of professional misconduct by a BCSP certificant, take steps to bring that misconduct to the attention of the Board of Certified Safety Professionals.
7. **ACT** in a manner free of bias with regard to religion, ethnicity, gender, age, national origin, sexual orientation, or disability.
8. **SEEK** opportunities to be of constructive service in civic affairs and work for the advancement of the safety, health, and well-being of their community and their profession by sharing their knowledge and skills.

Approved by the BCSP Board of Directors November 2, 2012
Effective January 1, 2013

FORMULAS for CALCULATING RATES
OSHA Recordable Incident Rate
Lost Time Case Rate
Lost Work Day Rate (LWD)
DART Rate (Days Away/Restricted or Job Transfer Rate)
Severity Rate

USEFUL DEFINITIONS

OSHA RECORDABLE INCIDENT RATE - a mathematical calculation that describes the number of employees per 100 full-time employees that have been involved in a recordable injury or illness.

TOTAL INCIDENT RATE – a mathematical calculation that describes the number of recordable incident per 100 full-time employees in any given time frame.

LOST TIME CASE RATE – a mathematical calculation that describes the number of lost time cases per 100 full-time employees in any given time frame.

LOST WORKDAY RATE – a mathematical calculation that describes the number of lost workdays per 100 full-time employees in any given time frame.

SEVERITY RATE – a mathematical calculation that describes the number of lost days experienced as compared to the number of incidents experienced.

DART RATE - a mathematical calculation that describes the number of recordable incidents per 100 full time employees that resulted in lost or restricted days or job transfer due to work related injuries or illnesses.

=====

INCIDENT RATE(S) USES

Incident rates, of various types, are used throughout industry. Rates are indications only of past performance (lagging indicators) and are not indications of what will happen in the future performance of the company (leading indicators). Incident rates have been standardized, so that OSHA and other regulatory agencies can compare statistically significant data, and determine where industries may need additional program assistance. OSHA uses the recordable incident rates to determine where different classifications of companies (manufacturing, food processing, textiles, machine shops, etc.) compare to each other with regard to past safety performance. Although OSHA could potentially use this data for enforcement action, unless incident rates are consistently high for a small company over a number of years, they will not normally target particular industries or companies for enforcement action.

OSHA has established specific mathematic calculations that enable any company to report their recordable incident rates, lost time rates, and severity rates, so that they are

comparable across any industry or group. The standard base rate for the calculations is based on a rate of 200,000 labor hours. This number (200,000) equates to 100 employees, who work 40 hours per week, and who work 50 weeks per year. Using this standardized base rate, any company can calculate their rate(s) and get a percentage per 100 employees.

=====

CALCULATIONS

OSHA Recordable Incident Rate

The OSHA Recordable Incident Rate (or Incident Rate) is calculated by multiplying the number of recordable cases by 200,000, and then dividing that number by the number of labor hours at the company.

$$\text{IR} = \frac{\text{Number of OSHA Recordable Cases} \times 200,000}{\text{Number of Employee labor hours worked}}$$

Rate Calculation Example - a company has 17 full-time employees and 3 part-time employees that each work 20 hours per week. This equates to 28,400 labor hours each year. If the company experienced 2 recordable injuries, then the formula works like this:

$$\text{IR} = \frac{2 \times 200,000}{28,400} \quad \text{IR} = \frac{400,000}{28,400} \quad \text{IR} = 14.08$$

What is now known is that for every 100 employees, 14.08 employees have been involved in a recordable injury or illness. Please note that smaller companies that experience recordable incidents will most likely have high incident rates, or the incident rates will fluctuate significantly from year to year. This is because of the small number of employees (and hence the lower number of labor hours worked) at the company. Calculations are more meaningful at larger companies that have a higher labor hour count.

=====

Lost Time Case Rate (LTC)

The Lost Time Case Rate is a similar calculation, only it uses the number of cases that contained lost work days. The calculation is made by multiplying the number of incidents that were lost time cases by 200,000 and then dividing that by the employee labor hours at the company.

$$\text{LTC Rate} = \frac{\text{Number of Lost Time Cases} \times 200,000}{\text{Number of Employee Labor Hours Worked}}$$

Rate Calculation Example--assume that one of two recordable cases had lost work days associated with the incident. The calculations would look like this:

$$\text{LTC Rate} = \frac{1 \times 200,000}{28,400} \quad \text{LTC Rate} = \frac{200,000}{28,400} \quad \text{LTC Rate} = 7.04$$

What is now known is that for every 100 employees, 7.04 employees have suffered lost time because of a work related injury or illness.

DART Rate (Days Away/Restricted or Job Transfer Rate)

The DART rate is relatively new to industry. This rate is calculated by adding up the number of incidents that had one or more Lost Days, one or more Restricted Days or that resulted in an employee transferring to a different job within the company, and multiplying that number by 200,000, then dividing that number by the number of employee labor hours at the company.

$$\text{DART Rate} = \frac{\text{Total Number of DART incidents} \times 200,000}{\text{Number of Employee Labor Hours Worked}}$$

Rate Calculation Example - assume that one of two recordable incidents resulted in limited or restricted work activity that necessitated a job transfer to a different position in the company. The first was a broken leg that had only lost time associated with it (no restriction or transfer). The calculations would look like this:

$$\text{DART Rate} = \frac{2 \times 200,000}{28,400} \quad \text{DART Rate} = \frac{400,000}{28,400} \quad \text{DART Rate} = 14.08$$

What is now known is that for every 100 employees, 14.08 incidents resulted in lost or restricted days or job transfer due to work related injuries or illnesses.

Severity Rate (SR)

The severity rate is a calculation that gives a company an average of the number of lost days per recordable incident. Please note, that very few companies use the severity rate as a calculation, as it only provides an average. The calculation is made by dividing the total number of lost workdays by the total number of recordable incidents.

$$SR = \frac{\text{Total number lost workdays}}{\text{Total number of recordable incidents}}$$

Rate Calculation Example – assume there were 5 lost workdays and two recordable incidents. The severity rate calculation would look like this:

$$SR = \frac{5}{2} SR = 2.5$$

What is now known is that for every recordable incident at the company, an average of 2.5 days will be lost due to those work related injuries and illnesses.

The Occupational Health and Safety Professional Capability Framework

A Global Framework for Practice



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While the term “Occupational Health and Safety” or “OHS” is used in this document, it should be considered interchangeable with “Occupational Safety and Health” (OSH) or “Work Health and Safety” (WHS).

Acknowledgments

The Board of Directors of the International Network of Safety and Health Practitioner Organisations (INSHPO) initiated the development of the Occupational Health and Safety (OHS) Capability Framework. With the editorial support of Laura Clements at the American Society of Safety Engineers and research support from Bradley Turner, the Framework was developed by a small working party consisting of:

- Pam Pryor, Registrar of the Australian OHS Education Accreditation Board (AOHSEAB)
- Andrew Hale, Professor Emeritus, Delft University of Technology, Netherlands and Chair of HASTAM in the UK
- Dennis Hudson, CEO, American Society of Safety Engineers (ASSE)

The INSHPO Board of Directors supported the development of the Framework by providing documentation, access to national experts and critical reviews of the emerging results. They provided these reviews by seeking comments from their respective member organizations. Thanks are due to the following past and present Board members and supporters:

- Giancarlo Bianchi, AIAS (Italy)
- Tom Cecich, ASSE (USA)
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- Isabella Yeo, SISO (Singapore)
- Andrew Tan, SISO (Singapore)
- Teresa Budworth NEBOSH (UK)
- Stuart Naylor, NEBOSH (UK)
- Barry Wilkes, NEBOSH (UK)

The working party collected and reviewed the documentation from national professional associations and certification bodies, including that already analyzed by ENSHPO in the EU Safe project,¹ to define the role, functions and competencies of OHS practitioners and professionals. Given the great diversity of approaches across countries, the working party developed a new overarching structure designed to encompass all approaches.

The draft framework document was subject to critical review, both through INSHPO's own channels and at international conferences and presentations, including the XX World Congress on Safety and Health at Work 2014 in Frankfurt and the 7th International Conference of the Working on Safety Network (wosnet2014) in Scotland. The framework has been further enhanced through a collaborative project with the International Council on Mining and Metals (ICMM) on OHS capability in the mining and metals industry. Dr. David Borys, adjunct associate professor at RMIT University, Australia was a member of the working group on the mining project and has made a significant contribution to the capability framework overall.

The working party first developed two parallel frameworks, one for the OHS Professional² and one for the OHS Practitioner. On the advice of the reviewers, the two roles have been compared and presented in this single document, with this final version being endorsed by the INSHPO Board of Directors.

¹ See www.eusafe.org.

² First published online in October 2015. The single framework document is superseded by this document, which addresses both Professional and Practitioner descriptions.



Foreword

How would you define what an Occupational Health and Safety (OHS) professional/practitioner does for a living? If you're a hiring/recruitment manager, how would you know that they're capable of keeping your workers safe? This Global OHS Capability Framework document was created by the International Network of Safety and Health Practitioner Organisations (INSHPO) to provide greater clarity around the generalist OHS positions by defining levels of practice, roles, and what capabilities, knowledge and skills they would require to be effective.

INSHPO began this project during a 2.5-day workshop in Istanbul in 2011 held in conjunction with the 19th World Congress on Safety and Health at Work. Built upon global comparative research and using the Australia OHS Body of Knowledge project as an inspiration, INSHPO investigated international qualification equivalencies, processes for accrediting OHS professional education, the various roles and tasks carried out by generalist OHS professionals and practitioners, various Continuing Professional Development (CPD) requirements for maintaining certifications, and the different learning outcome requirements for OHS education programs in different countries. With complex differences across countries in their respective approaches to OHS practice and recognition of OHS education and professional status, it was determined that rather than adopt a compromise, the variation in the structure and underlying organizing principles of the approaches by various countries lent itself to the creation of a new structure drawing on each country's strengths. The INSHPO Board of Directors accordingly initiated the development of the Occupational Health and Safety (OHS) Capability Framework.

The Framework provides a foundation piece for the development of international standards for OHS practice. It promotes a high standard of capability among OHS Professionals and Practitioners, and in turn, informs employers and regulators of their roles and capabilities. The sections on knowledge and skills provide benchmarks for education and training bodies and OHS professional associations as they develop educational programs, continuing professional development and certification and designation schemes.

I would like to acknowledge and congratulate all the INSHPO membership organizations and individuals who have worked with this project to promote a high standard of capability and support the global OHS profession. Member organizations participated in working parties, accessed national experts for comments and performed critical reviews. The American Society of Safety Engineers provided strong editorial support. The framework has been further enhanced through a collaborative project with the International Council on Mining and Metals (ICMM) on OHS capability in the mining and metals industry.

I believe that the Global OHS Capability Framework represents the most significant step for the occupational health and safety field in the international arena, where for the first time, professional safety organizations from around the world have come together to agree on a common framework for the range of OHS roles within an organization – wherever that organization may be.

I trust that this framework can be utilized in each national constituency, to build common international health and safety standards and ultimately contribute to our shared goal of reducing workplace injury, illness and death throughout the world.

Eldeen Pozniak
INSHPO President, 2015-2017



What is the Singapore Accord?

The Singapore Accord is a call to action. It is collective action by the leading OHS professional and practitioner organisations from around the world, supported by INSHPO, to commit to the Global Vision of Prevention through the adoption of a global framework for practice. Such a framework seeks to uphold high standards of competent health and safety professionals and practitioners in creating healthier and safer workplaces.

The Singapore Accord Steering Committee believes that broad partnership at various levels can bring greater success. Hence, it seeks also to engage governments and public authorities, employers, employee organisations, human resource and talent acquisition bodies, educators and trainers to join the OHS community to commit to enabling the standards set in the framework. Together, we can transform Vision Zero (the aspiration to achieve zero harm to workers) from vision to reality.

Singapore Accord Steering Committee

- Seet Choh San, SISO (Singapore), Chair
- Giancarlo Bianchi, AIAS (Italy)
- Laura Clements, ASSE (USA)
- John Hollohan, BCRSP (Canada)
- Dennis Hudson, ASSE (USA)
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- Vince McNeilly, IOSH (UK)
- Terrie S. Norris, ASSE (USA)
- Richard Pollock, BCSP (USA)
- Eldeen Pozniak, CSSE (Canada)
- Barry Wilkes, NEBOSH (UK)



Singapore Accord on the Standards of OHS Professionals

Having met in Singapore on 3 September 2017, at the start of the XXI World Congress on Safety and Health at Work, representatives of business and workers, education institutions, policy-makers in governments and public authorities, OHS professional organisations, and experts in occupational health and safety (OHS) joined the International Network of Safety and Health Practitioner Organisations (INSHPO) and its members to sign the Singapore Accord, a commitment to improving OHS professional and practitioner capabilities so they may more effectively guide and lead the creation of healthier and safer workplaces.

Acknowledgements

1. That according to the ILO, more than 2.3 million people die per year as a result of occupational accidents or work-related diseases. In addition, 317 million accidents occur on the job annually, resulting in significant human suffering and an economic burden estimated at 4% of the Gross Domestic Product.
2. That among the ILO goals is “to create worldwide awareness of the dimensions and consequences of work-related accidents, injuries and diseases and to place the health and safety of all workers on the international agenda and to stimulate practical action at all levels.”
3. That a cornerstone to improving occupational health and safety performance and stimulating practical and effective preventative actions is a network of competent and capable professionals and practitioners.
4. That occupational health and safety professional and practitioner knowledge and skills must be evidence-informed and based on strong scientific and technical concepts.
5. That there is strong evidence from other professions that demonstrates the value of utilizing a common global framework for practice to establish defined and consistent standards or attributes required to undertake professional roles competently. For a common global framework for practice to be effective it must be well recognized and accepted by the profession, governments and business.
6. That INSHPO has developed **The Occupational Health and Safety (OHS) Professional Capability Framework - A Global Framework for Practice (Framework)**, a consensus-based tool developed to promote a high standard of capability for OHS professionals. The **Framework** defines the role, functions and competencies of OHS practitioners and professionals. It is based on an analysis of the practices of various professional associations, certification bodies and credentialing organisations and was subject to critical review, both through INSHPO’s own channels and at international conferences and presentations. The **Framework** provides generic guidance which may need to be adapted and developed in more detail by each organization to account for variations in regulations, histories and cultures as they pertain to OHS practice.



Signatories to this agreement are in accord that:

1. We are committed to improving OHS professional and practitioner capabilities so they may more effectively guide and lead the creation of healthier and safer workplaces.
2. We are committed to promoting the use and acceptance of the **Framework** as a common platform to develop capable, knowledgeable, and skilled OHS professionals and practitioners across industry sectors and geographic borders.
3. We are committed to striving to use the **Framework** to inform our work in relation to improving the competence and capability of the profession and thereby occupational health and safety standards across the world:
 - a. **As OHS professionals and practitioners** – as a reference and basis for gap analysis in relation to our professional practice and career development, to aid the development of continuing professional development plans to ensure that we are capable and competent;
 - b. **As OHS member associations** – in the development of professional educational programs and as a benchmark to ensure that our members possess relevant and up-to-date skills which allow them to undertake their role competently and effectively;
4. We are committed to continued cooperation and collaboration in developing global standards of practice for the purpose of improving the skills and capability of OHS professionals and practitioners and adapting the **Framework** to meet the needs of key stakeholders around the world.



1. Introduction

1.1 INSHPO

The International Network of Safety and Health Practitioner Organisations (INSHPO) is the global voice for the occupational health and safety (OHS) profession. INSHPO provides an international forum for engagement on OHS-related matters and for advancing the OHS profession through the exchange of evidence-based practices and the development of a harmonized framework for the profession. Its member organizations include OHS professional bodies from the United States, Canada, the United Kingdom, the European Union, Australia, New Zealand, the Russian Federation, Singapore and Korea.

INSHPO has recognized the need for a global framework for practice of OHS Professionals. In addition to this project, which defines the roles, knowledge and skills for both vocationally and university-educated (or other higher education) OHS personnel, related projects by INSHPO include:³

- A model code of conduct for OHS Professionals and Practitioners
- A literature review providing the basis for formulating a value statement for the OHS Professional
- Guidelines for certification of individuals
- Guidelines for accreditation of OHS education

The relationship of these different projects is shown in Figure 1, which integrates them into a global framework for practice.

1.2 Definition of "Capability"

While many may use “competency” to describe the nature of a professional framework, this document adopts a different approach in using the term “capability.” In developing this framework, INSHPO considered that while it is vital for both OHS Professionals and OHS Practitioners to be competent, effective and influential, OHS personnel must go beyond competence to capability.

“Competence” has been defined as the ability to transfer and apply knowledge and skills to new situations and environments, consistently applying knowledge and skills to a standard of performance required in the workplace.⁴ In comparison, “capability” is:

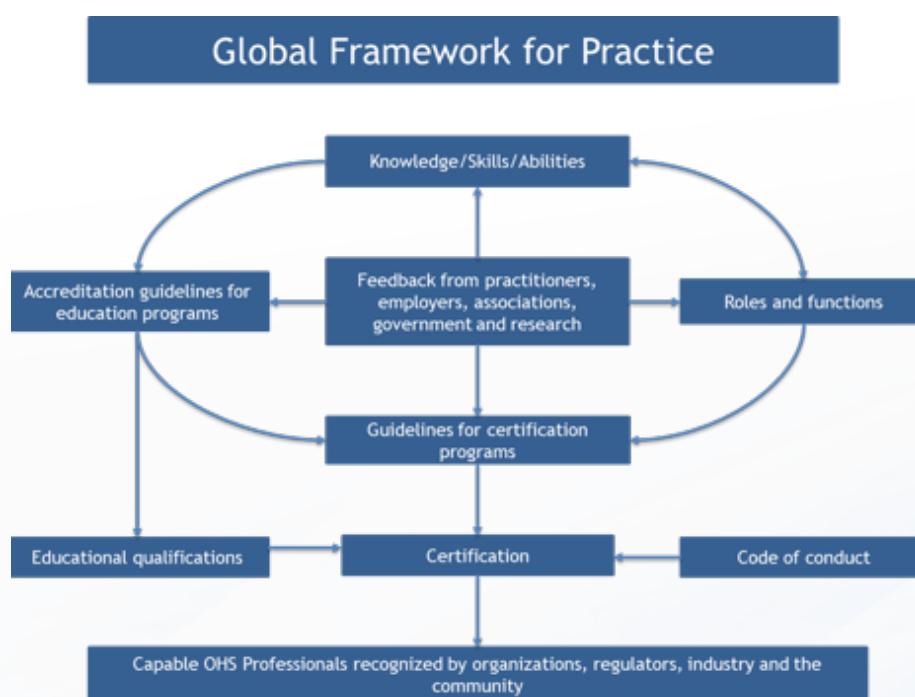
The applied theoretical knowledge that underpins practice in occupations and professions and also the industry-specific knowledge and skills that transcend particular workplaces and the tacit knowledge of the workplace.⁵

³ See www.inshpo.org for details.

⁴ Naidu, R., Stanwick, J., & Fraser, K. (2013). Glossary of VET. Adelaide: NCVER.

⁵ Wheelahan, L., & Moodie, G. (2011). Rethinking skills in Vocational Education and Training [Electronic Version], from http://www.bvet.nsw.gov.au/pdf/rethinking_skills.pdf.

Figure 1: A Global Framework for Practice



The difference between competency and capability is that competency is about delivering the present based on the past, while capability is about imagining and being able to realize the future.⁶ Competency is a necessary part of capability,⁷ but capability goes much further. Capability is about confidence and adaptability as well as the development and effective use of knowledge and skills in complex and changing circumstances, including those that may not have been previously experienced.

Capable people have knowledge, skills, self-esteem and values that make them confident in their ability as individuals and in association with others in a diverse and changing society⁸ to:

- take effective and appropriate action
- explain what they are about
- live and work effectively with others and
- continue to learn from their experience

Thus, while competence is essential for OHS practice, the concept of capability provides a further dimension that expands our understanding of the required knowledge and skills and how these should be applied as part of positioning the OHS profession and OHS Professionals and Practitioners for the future.

1.3 The OHS Professional Capability Framework – An overview

INSHPO has developed this framework to:

- Facilitate a shared understanding of the difference in roles of the OHS Professional and the OHS Practitioner.
- Position the OHS Professional as a key advisor, strategist and leader in fully integrating the management of OHS risk into sustainable business practice.
- Position the OHS Practitioner as a skilled implementer of OHS activities and an effective OHS supporter and communicator at the site level.

This document is intended for six target audiences:

- OHS professional associations and related certification bodies: to inform their certification and other assessment processes.
- OHS Professionals and OHS Practitioners (subsequently, collectively referred to as “OHS specialists”): to act as a reference and basis for gap analysis in relation to their professional practice and career development, to aid the development of continuing professional development plans and to assist in promoting the OHS Professional and OHS Practitioner roles in relation to each other.
- OHS educators: to use while developing and reviewing OHS education programs.
- Employers and recruiters: to assist in developing position descriptions for OHS roles, in recruiting OHS personnel and in performance evaluation as a basis for professional development.
- OHS regulators: to aid in understanding the range of OHS specialist roles in order to clarify the requirements for certification/registration/licensing of OHS special-

ists as well as to inform the professional development of government and other regulatory inspectors.

- The community: to assist in creating a better understanding of the scope of OHS specialist roles.

The framework promotes a high standard of capability for OHS specialists and in turn informs employers and regulators as to the differential capabilities of OHS Practitioners and OHS Professionals. The sections on knowledge and skills provide benchmarks for education and training bodies and OHS professional associations in developing the detail of certification schemes, educational programs and continuing professional development. It is recognized that differences will exist in terminology and emphasis across different countries depending on history, legal and regulatory frameworks and industry mix. This framework gives generic guidance, which may need to be adapted and developed in more detail by each country to account for such differences.

The framework was developed by comparing documents provided by OHS professional bodies and OHS certification bodies for European Union countries (particularly the United Kingdom, the Netherlands and those included in the EUSafe project), the United States, Canada, Australia, Singapore and the Russian Federation. Variation in the structure and underlying organizing principles of these documents lent itself to the creation of a new structure drawing on each country’s strengths. This structure describes the activities of OHS Professionals and OHS Practitioners at a generic level that allows for variations in national regulations, histories and cultures as they pertain to OHS practice.

The document begins by clarifying the roles of the OHS Professional and of the OHS Practitioner and the context in which they work. It provides position profiles that set the roles in an organizational context and highlight gradations across the roles. It then indicates that these gradations are partly related to differences in the maturity of the OHS management system in the employing organizations. Finally, it details the activities, knowledge, skills and hazards that the OHS Professional and OHS Practitioner may be expected to advise on and help manage.

To facilitate use of the Framework, guidelines and online tools have been developed to support the various target audiences in applying the Framework for their particular purpose and context.⁹

⁶ Stephenson, quoted in Lewis, J. (2009). Introducing the ACEL leadership capability framework. *Curriculum and Leadership Journal*, 7(16).

⁷ Hase, G., & Davis, L. (1999). *From competence to capability: the implications for human resource development and management*. Paper presented at the Millennial challenges in management, education, cyber-technology and leadership: Association of International Management, 17th Annual Conference San Diego.

⁸ Stephenson, J. (1992). Capability and quality in Higher Education In J. Stephenson & S. Weil (Eds.), *Quality in Learning*. Kogan Page.

⁹ See www.inshpo.org.

2. Clarifying OHS Roles

OHS specialists are usually cast in the role of problem solvers. The range of problems they are required to solve range from helping organizations identify hazards and assess their associated risks, to proposing solutions to control those risks. Furthermore, OHS Professionals may be called upon by senior managers to provide advice on combating increasing or plateauing rates of work-related fatality, injury and illness, investigating near misses and accidents and devising programs to provide a framework for OHS decision making and action. Should this advisory role spill over into the specialist taking over direct responsibility for OHS from line and executive management, this would be at odds with the model of continuous improvement enshrined in current management system standards, including those for OHS, which rightly stress that primary responsibility for OHS rests with the line.

The OHS Professional's role should be reconceptualized as a continuous improvement expert, or "value engineer" as opposed to the current conceptualization of the role as just a problem solver or enforcer. The role needs to be that of a safety engineer who truly understands work processes as a system and offers solutions to improve the system of work before anything goes wrong or an actual injury or damage is identified. A further benefit of this approach is the potential to break down barriers (silos) between safety and operations. Safety can be integrated into business operations where OHS specialists work alongside workers, supervisors and managers with the shared purpose of continually improving work processes. As a result, OHS specialists can demonstrate their value to the organization.^{10 11}

Concomitant with the changing role, soft skills, including coaching and the ability to work with organizations at different levels of cultural maturity, are appearing as skills in demand for OHS Professionals and OHS Practitioners. Terms such as "soft skills" and "coaching" are vague and are better understood from the perspective of relationship building. The ability to build a web of relationships enables the OHS specialist to influence others to bring about change in organizational practices focused on risk control, which, in turn, should allow the organization to move up the safety culture ladder.

OHS specialists also need to be sensitive to the cultural maturity of the organization in which they work since it will determine their role in the organization and the way in which they can best exert influence (see Section 2.4 on page 7).

2.1 OHS Professional and OHS Practitioner

The OHS profession or role advises and supports management in its overall task of managing risks to prevent or mitigate work-related fatalities, injuries and illnesses. This emerging profession is often not well defined, locally or globally. The scope and nature of the role, education requirements and regulatory context vary across and even within countries. The OHS role originated in many organizations as a technical compliance officer, educated via a vocational track and mainly engaged at lower levels in the organization, providing technical¹² advice focused on compliance, personal protective equipment and a reactive response in the workplace. However, as OHS management has matured over the last century, it has taken two paths, one the vocationally-trained OHS Practitioner, the other a more managerial/professional role that influences, engages and coaches all levels of the organization, including senior management.

While the workplace may have a range of OHS roles, two clear categories exist:

- the **OHS Professional**, who is usually **university educated** (or has attained a similar level of higher education), and
- the **OHS Practitioner**,¹³ who is usually **vocationally educated**.

Table 1 summarizes the key differences between the two roles with further detail provided in Section 3, "Position profiles."

The OHS Professional is a key advisor, strategist and pilot to the organization's leadership in fully integrating the management of OHS risk into sustainable business practice at all levels. The OHS Practitioner implements strategy, notably at site level, with an emphasis on state-of-the-art-compliance. While the two roles may overlap, role clarity is imperative in enabling organizations to improve their business and OHS performance. The two roles are further clarified below.

¹⁰ See also the proposals for an ISO standard on "The Human-Centred Organization." British Standards Institution March 2016. BS ISO 27500

¹¹ See Borys, D. (2014). The Value Proposition for the Occupational Health and Safety Professional – Literature Review. INSHPO. www.inshpo.org.

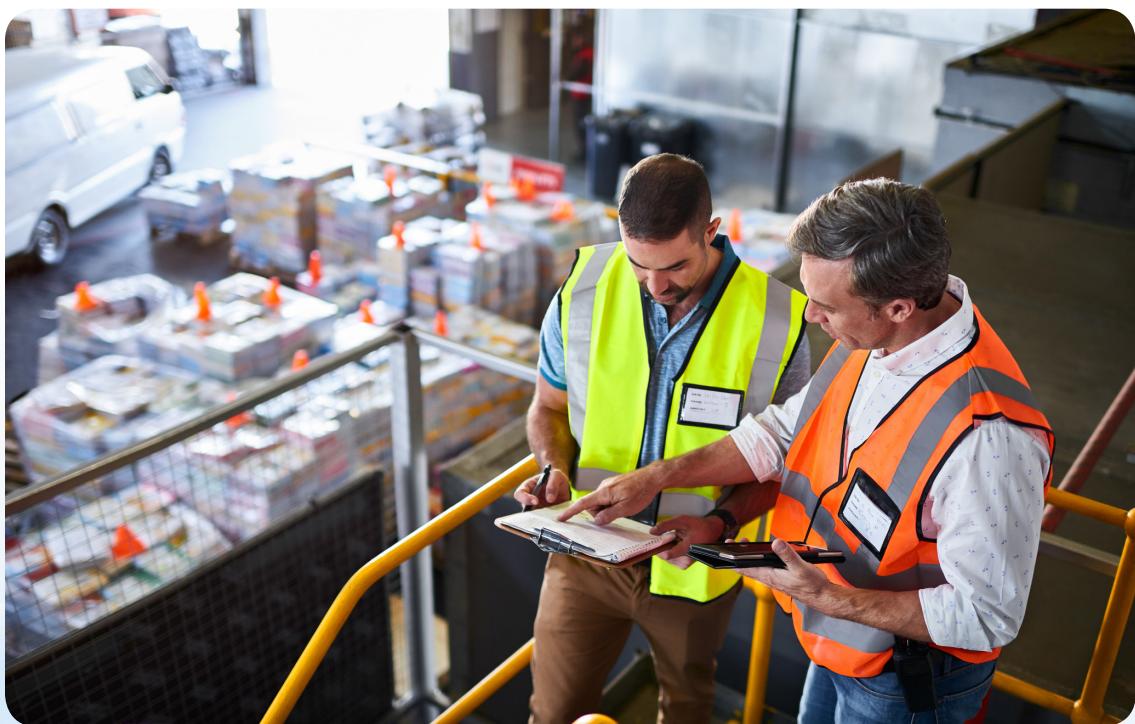
¹² "Technical" is normally used in the rest of this document not in its narrow sense relating only to hardware, engineering and physical sciences, but in the broader meaning of the appropriate, detailed knowledge of the application of the broad range of disciplines relevant to OHS, including human factors.

¹³ In some countries the OHS Practitioner role may be termed "OHS technician," "OHS technologist" or similar.



Table 1: Comparison of OHS Professional and OHS Practitioner roles

OHS Practitioner	OHS Professional
Implementer/executor of strategy and the framework for OHS critical control management	Designer of OHS management strategy and framework for OHS critical risk control management
Communicates predominantly with middle management, supervisor and shop floor, building relationships as a basis for influence, mentoring and providing technical advice	Influences senior managers, building relationships as a basis for influence, mentoring and providing integrated technical and strategic advice
Oversees and drives monitoring and compliance, acting as local change agent when required	Develops monitoring systems. Involved in organizational review and change management
Supports safe working environment by maintaining administrative processes, conducting training and using state-of-the-art tools, processes and standard practice solutions	Considers wider context of business processes and external regulatory, market and societal influences
Advice/action based on technical knowledge, experience and input by OHS Professionals and other technical advisors	Advice/action based on conceptual and technical knowledge mediated by analysis of evidence, experience and critical thought
Focuses on organization's primary processes operating in known contexts within established parameters	Able to extend his or her understanding and control to novel, unknown and complex risks and their control
Accesses, evaluates and uses a broad range of workplace and industry sources of information	Works autonomously within own initiative and responsibility but values professional collaboration
May work with SMEs in well-known hazards or under OHS Professional supervision in larger organizations	Usually works in large, complex and/or high-hazard organizations or as a consultant to medium-sized organizations
May work with SMEs in well-known hazards or under OHS Professional supervision in larger organizations	Usually works in large, complex and/or high-hazard organizations or as a consultant to medium-sized organizations
Usually educated through vocational or technical streams	Usually educated through university or higher education sector



2.1.1 The OHS Professional

OHS Professionals are designers of strategy relating to the organization and management of OHS within the wider context of business processes and external regulatory, market and societal influences. They are influential with senior management and are involved in problem solving and organizational review and change as advisers and consultants. Their advice is based on conceptual and technical knowledge of design, operations and management, mediated by experience, analysis of evidence and critical thought. This enables them to extend their understanding and control to novel, unknown and complex risks. They understand how to access, use, critically evaluate and develop the evidence base, and they value professional collaboration. They gain their OHS education in the majority of cases through the higher education sector. OHS Professionals will engage with any level of the organization from shop floor to board room as well as other functions and professionals. They should report at a high level in the organization, for example, to the managing director, CEO or higher-level OHS, risk or operations director. They may have a team of OHS personnel reporting to them.

The OHS Professional role requires an understanding of a unique multidisciplinary body of knowledge concerning risk and the elimination or reduction of work-related fatalities, injuries and illnesses as well as property damage and associated social and financial losses. Typically, the OHS Professional provides broad-based advice, support and analysis to organizations regarding risk assessment and controls and their management processes. The role also supports health and wellness as it relates to the work environment.

The capable OHS Professional has generic knowledge appropriate to risk in all activities and employment, supported by deeper knowledge of his or her specific industry, including its characteristic hazards and risk prevention, management and mitigation processes. They also possess a broad understanding of a core range of hazards and hazard controls.

OHS Professionals may be engaged as internal employees in medium to large or global organizations, particularly in complex and major hazard technologies, or as external consultants advising small to global organizations. They may work solo, as part of a team or give direction to others.

2.1.2 The OHS Practitioner

OHS Practitioners are implementers of strategy and actions usually designed by an OHS Professional. They support a safe working environment by maintaining OHS administrative processes, conducting training and using a range of state-of-the-art tools, processes and common practice solutions to OHS risks. Their

risk assessment and management are usually aimed at routine and well-known processes and work. They oversee and drive monitoring and compliance in relation to technical and behavioral risk controls. They are likely to have a focus on the workplace and the organization's primary processes and communicate predominantly at middle management, supervisor and shop-floor levels, often taking a mentoring and coaching role. They usually work in either small- or medium-sized enterprises (SMEs) with relatively well-known risks, or in larger and more complex enterprises under supervision or mentoring by OHS Professionals (which may be indirect). In all cases, their work focuses on known contexts within established parameters. Within those parameters they have substantial personal responsibility for the planning and quality of their own work. They usually gain their OHS education through the vocational or technical sector.

The relationship of the OHS Practitioner to the OHS Professional in larger organizations is similar to that of the nurse practitioner to the general practitioner and hospital specialist in the medical profession. Like nurse practitioners working under doctors in medical practices, OHS Practitioners are generalists in the practice of OHS, liaising with and referring as appropriate to higher-level OHS Professionals, while catering on their own authority for less complex problems in familiar environments and known and proceduralized tasks. This practice model can also be compared in the small- and medium-sized organizations with that of an accountant as compared to a bookkeeper, where the accountant (*cf.* OHS Professional) sets up the chart of accounts and accounting practices and provides strategic oversight whereas the bookkeeper (*cf.* OHS Practitioner) undertakes the day-to-day activities.

The OHS Practitioner role requires an understanding of a multidisciplinary body of knowledge concerning well-known hazards and risks, and the elimination or reduction of work-related fatalities, injuries, and in some jurisdictions, occupational diseases and property damage. Typically, the OHS Practitioner provides broad-based advice, support and monitoring of compliance to organizations regarding hazard and risk assessment and controls and the known procedures for their management.

Capable OHS Practitioners have generic knowledge appropriate to the management of OHS hazards and their controls, supported by deeper knowledge of their specific industry, including its characteristic hazards and standard risk controls, risk prevention and mitigation processes. They also possess a broad understanding of a core range of hazards and hazard controls.

OHS Practitioners are usually engaged as internal employees in medium to large or global organizations,

particularly those with developed and well-known technologies involving manual and machine labor. They may work in smaller organizations, sometimes in a multi-function role preferably under supervision from an OHS Professional, as part of a team or with the support of an OHS Professional as consultant. OHS Practitioners will engage most frequently with shop floor, supervision and middle management.

2.2 Scope of practice in the context of other professionals and specialists

The focus of activity for OHS specialists is providing advice and support for the prevention and management of work-related fatalities, injuries and illnesses, property damage and associated social and financial losses. Work health and the promotion of physical and mental wellness are increasingly becoming important areas for the OHS Professional, although less so for the OHS Practitioner. In some countries and organizations, the OHS role also encompasses prevention and management of environmental hazards and promotion and management of sustainability.

While many OHS specialist position descriptions may include one or more of the following areas of responsibility, this document does not consider them to be core functions and does not address them in detail. The scope of this Framework is limited in the following way:

- Environment: the core OHS role is limited to environmental aspects and impacts associated with work activities.
- Emergency response management: the core OHS Professional role is limited to planning and liaising with other services providing firefighting, rescue and emergency treatment and business continuity, while that of the Practitioner is likely to be limited to site-level responses.
- Rehabilitation, return to work: the core OHS role is limited to liaising with medical and occupational health specialists and advising on workplace adjustments to aid early return to work.
- Security: the core OHS role is limited to managing and resolving conflicts between safety and security measures. While the OHS Practitioner may have some site-level security-related responsibilities, these are not considered core OHS activities.

Section 7 sets out a range of hazards of which the OHS Professional may be expected to have some knowledge. It is likely that there will be considerable variation in the range of hazards forming the core of the OHS specialist's knowledge and practice depending on the industry



within which they work, their professional interests and the country or countries within which they practice. Individual position descriptions may also note other areas of safety that share approaches, knowledge and skill bases and management and regulatory principles with OHS, such as transportation safety, product safety, patient safety, public safety, home and leisure safety, and sport safety. These are not covered in this document.

2.3 OHS and other functional roles

It is expected that OHS Practitioners and Professionals will liaise with and enlist the assistance of OHS specialists with deeper knowledge bases that may not be core to the OHS Professional or Practitioner but are important in the overall risk picture. These OHS-related specialists include, among others, ergonomists, occupational/industrial hygienists, organizational/occupational psychologists, occupational health professionals and professionals from allied professions, such as fire protection or structural engineers/specialists. OHS Professional and Practitioners may also collaborate with experts from disciplines such as sustainability, environmental protection, emergency response, security, rehabilitation and mental health, law and insurance. OHS Professionals and Practitioners need to have sufficient understanding of each of these fields to identify the potential need for involvement of professionals in these and other disciplines.

Managers are responsible for the management of OHS and risk. All roles within the organization have specific responsibilities not only for individual health and safety, but for their contribution to the OHS management system. Shared understanding and clarity of responsibility between line and corporate management and the OHS function are vital for effective and efficient management of OHS. Any gaps resulting from role confusion may result in exposure to legal or critical risk.

2.4 OHS roles in organizations of different OHS maturity

Organizations can be classified based on the maturity of their approach to managing OHS. A much-used classification¹⁴ identifies five stages in development:

- Pathological: does not care about safety, conceals accidents and breaches of OHS regulation
- Reactive: cares about safety only after something goes wrong
- Calculative/bureaucratic: cares about safety in a rule-bound way, if it can be shown to be cost-neutral or advantageous
- Proactive: cares about safety, makes plans in advance to achieve it and seeks innovative strategies, beyond inflexible rules, to achieve it
- Generative: gives priority to safety; fully understands the interactions between social and technical aspects of work and how OHS can be integrated with other imperatives



It is a general objective of all OHS specialists to help shift their organization/client to move up the hierarchy to the most suitable level for their organization. The emphasis in the role of OHS specialists will differ depending on the cultural maturity of the organization, as will the division of roles between the OHS specialists and the line and staff of management. While no current studies relate this organizational maturity scale to differences in OHS specialist roles, knowledge and skill requirements, some general principles are discussed below.

At the pathological and reactive levels (and to a lesser extent the calculative level) the role of the OHS Professional will be focused on opportunities provided by actual accidents or dramatic near-misses to persuade the organization to move up the maturity hierarchy, while the role of an OHS Practitioner may be limited to fulfilling unavoidable legal requirements and enforcing them. Practitioners at these three lower levels may need to resist attempts by line and senior management to make them, rather than the line, primarily responsible for OHS performance. At the calculative level, there will be more scope for the OHS Practitioner to propose and support the implementation of state-of-the-art risk controls. As the organization moves to the proactive and generative levels, many aspects of the role of the OHS Practitioner may be incorporated and accepted into the task specifications of line and staff, leaving the Practitioner primarily with support and monitoring tasks. The OHS Professional, on the other hand, may, at the proactive and generative levels, have increased opportunities to support and influence the development and implementation of effective OHS management strategies and the integration of OHS into the corporate strategy and practice.

Cultural maturity may vary according to the age, financial status and organizational history of the business as well as the economic and regulatory environment of the country or region. Being sensitive to the maturity of their organization will enable OHS specialists to tailor their relationships and social interaction with managers, front-line supervisors and workers to become effective contributors to OHS management and champions of culture change.

The Appendix summarizes the potential variation in the OHS roles alongside an organization's cultural maturity.

¹⁴ Parker D., Lawrie M., Hudson P. (2006). A framework for understanding the development of organizational safety culture. *Safety Science*, 44(6), pp.551-562.

3. Position Profiles

The Capability Framework describes the activities, knowledge and skills for OHS specialists. These roles occur within organizations, and the positions of OHS Practitioner or OHS Professional will have many parameters in addition to the OHS-specific components. Gradations in the OHS Practitioner and OHS Professional positions also reflect the position's seniority, the role's demands and the organization's structure.

INSHPO has developed position profiles based on the Australian Qualification Framework (AQF)¹⁵, the European Qualification Framework (EQF)¹⁶ and several professional frameworks from related professions. The profiles (Table 2 and 3) give an outline of the OHS Professional and OHS Practitioner roles at three levels for each role in terms of:

- Position details
- Professional parameters
- Nature and complexity of knowledge and skills
- Qualification

The position profiles do not address the OHS capabilities in any detail, as these will be found for the two generic levels (Practitioners and Professionals) in Sections 4–6 of this document. The profiles provided here show how each of these two generic OHS roles can be developed into three more differentiated roles and how the activities, knowledge and skills can be contextualized to create a defined organizational role statement or position description. The resultant position descriptions will not only inform the recruitment of suitably capable people into OHS roles, but will provide a structure for performance appraisals and ongoing professional development of incumbents.

Organizations will have their own structure and format for documenting position descriptions. In some cases, the position details may be used to confirm that the organization position description is accurate.

¹⁵ See <http://www.aqf.edu.au/> for details of the Australian Qualification Framework.

¹⁶ See https://ec.europa.eu/ploteus/search/site?f%5B0%5D=im_field_entity_type%3A97 for details of the European Qualification Framework.



Table 2: Position profiles for OHS Practitioner

		Practitioner Level 1	Practitioner Level 2	Practitioner Level 3
Position details		OHS Officer	OHS Advisor	OHS Coordinator
Representative titles				
Key purpose of role	<p>To support a safe work environment by maintaining OHS administrative processes, conducting basic OHS training and effectively using a range of OHS tools and processes to implement OHS programs and drive compliance.</p> <p>To monitor the implementation of critical controls.</p>	<p>To contribute to maintenance of a safe and healthy work environment by implementing and monitoring OHS systems and processes in their local area. This includes managing OHS administrative processes, conducting training and effectively using a range of OHS tools and processes to implement OHS programs and drive compliance.</p> <p>To initiate, promote and implement site-level activities to improve OHS.</p> <p>To contribute to the implementation and monitoring of critical controls.</p>	<p>To contribute to development and maintenance of a safe and healthy work environment by implementing and monitoring OHS activities to continuously improve OHS. This includes managing OHS administrative processes, identifying training needs, designing and conducting training and effectively using a range of OHS tools and processes to implement OHS programs and drive compliance.</p> <p>To design, develop and implement innovative site-level activities to improve OHS.</p>	<p>To drive site-level identification, implementation and monitoring of critical controls.</p> <p>May manage a small site OHS team.</p>
Typical reporting line	<p>OHS manager or coordinator in larger organizations.</p> <p>In SME, may report to operations manager with advice from contracted consultant.</p>	<p>OHS manager in larger organizations.</p> <p>In SME, may report to operations manager/CEO with advice from contracted consultant.</p>	<p>OHS manager in larger organizations.</p> <p>In SME, may report to manager/CEO with advice from contracted consultant.</p>	
Professional parameters				
Autonomy	<p>Limited responsibility in known or changing contexts, within established parameters.</p> <p>Stops work if unsafe.</p> <p>Works under direction with responsibility for own output.</p>	<p>Identified responsibility in known or changing contexts and within broad but established parameters.</p> <p>Stops work if unsafe.</p> <p>Works under general direction with personal responsibility for own outputs within broad parameters.</p>	<p>Defined responsibility in contexts that are subject to change within broad parameters.</p> <p>Stops work if unsafe.</p> <p>Works under general direction within a clear framework of accountability, exercising substantial responsibility and autonomy in area of work.</p>	

Influence/ leadership	<p>Interacts and engages with operational staff, supervisors and consultative groups in own area. Focuses on compliance monitoring.</p> <p>Encourages and supports others in adapting to change.</p> <p>Mentors line workers.</p>	<p>Interacts with and influences operational, supervisory and line and middle management and consultative groups across a designated area.</p> <p>May make decisions with a potential to influence others' work.</p> <p>Supports changes management processes in local area.</p> <p>Builds relationships as a basis for influence, mentors supervisors and workers with a focus on empowerment of others rather than control.¹⁷</p>	<p>Influences work across a designated area/site, including projects and team activities; may have some responsibility for resource allocation and engagement with external agencies.</p> <p>Initiates and supports change in area of responsibility.</p> <p>Establishes communication channels and develops and maintains relationships to influence and mentor line managers in local area.</p>
Complexity	Performs a range of varied work activities, usually as defined in written procedures, in a structured and specified environment.	Performs a range of work that is largely routine, but sometimes complex, in a specified range of work environments.	Performs a range of complex advisory and technical activities in a variety of contexts.
Business and organizational skills	<p>Demonstrates an understanding of the operational activities and demands in his or her area of work.</p> <p>Manages own activities to meet work/project timelines.</p>	<p>Demonstrates an understanding of the implications of OHS strategies and activities for operational functions and areas of the organization.</p> <p>Manages own activities to meet work/project timelines.</p>	<p>Demonstrates an understanding of how OHS interacts/integrates with the broader operational environment within the organization/site.</p> <p>May manage a site-level team of OHS personnel in larger organizations.</p> <p>Has personal planning and organizational skills to meet work/project deadlines.</p>
Knowledge and skills			
Knowledge	Demonstrates broad factual and technical OHS knowledge with some theoretical basis.	Demonstrates broad technical and theoretical OHS knowledge with depth in some areas.	Demonstrates comprehensive and integrated OHS technical knowledge underpinned by a theoretical understanding with depth in some areas.
Analyze and evaluate information	Applies cognitive skills to identify, analyze, compare and act on information from a range of workplace sources as per procedures.	<p>Applies cognitive and communication skills to identify, analyze, synthesize and act on information from a range of workplace sources.</p> <p>Takes advice and input from others as part of collecting and analyzing information.</p>	<p>Applies cognitive and communication skills to identify, analyze, synthesize and act on information from a range of workplace and external sources.</p> <p>Considers the views and input of others as part of collecting and analyzing information as a basis for decision making</p>
Problem solving	Applies a methodical approach to provide technical solutions of a routine or contingency nature to a defined range of predictable problems in known environments.	Applies cognitive and technical skills to analyze, plan and evaluate approaches to sometimes unpredicted problems within a framework of existing systems and processes and in known and specified environments.	Applies cognitive and technical skills to develop creative solutions to nonroutine and sometimes complex problems in a defined but wide range of environments.

¹⁷ The term "builds relationships as a basis for influence" is used in preference to "coaching" as coaching implies a power role rather than empowering. See Section 2 for an explanation of the importance of the terminology.

Table 2: Position profiles for OHS Professional (Continued)

Transmit knowledge skills and ideas	<p>Applies communication skills to guide activities and share information across the work group(s).</p> <p>Prepares basic reports using appropriate writing style, grammar and data displays.</p>	<p>Applies communication and training skills to transfer OHS knowledge and skills to others.</p> <p>Prepares reports on OHS performance and trends using appropriate writing style, grammar and data displays.</p>	<p>Applies communication and training skills to transfer sometimes specialist knowledge and skills to others in a persuasive manner to achieve desired outcomes.</p> <p>Develops reports for site and regional/commodity managers on OHS performance with recommendations for site-level action to improve OHS.</p>
Soft skills	<p>Works well in a team and engages with other frontline colleagues in informal and formal environments.</p>	<p>Applies communication, engagement and skills to promote and support change.</p> <p>Applies mentoring skills to develop capability of site operational personnel.</p>	<p>Applies communication, engagement and leadership skills to initiate and support change.</p> <p>Applies mentoring skills to develop capability of site operational and OHS personnel.</p>
Qualifications			
Qualification level	AQF 4/ EQF 4	AQF 5/EQF 4	AQF 6/EQF 5

Table 3: Position profiles for OHS Professional

		Professional Level 1	Professional Level 2	Professional Level 3
Position details				
Representative titles	Graduate OHS Advisor	OHS Manager	General/Group Manager, OHS/Safety VP/Director OHS/Safety	
Key purpose of role	<p>To support development and maintenance of a safe and healthy work environment by:</p> <ul style="list-style-type: none"> • ensuring identification of key risks and critical risk controls; • analyzing OHS training needs; • designing, delivering and evaluating OHS training; and • applying the OHS evidence base to develop, implement and monitor OHS strategy and programs, including for OHS critical control management. <p>To ensure appropriate maintenance of OHS records.</p>	<p>To apply leadership, specialist skills and knowledge of the OHS evidence base to provide strategic direction and support to managers to:</p> <ul style="list-style-type: none"> • operationalize and implement corporate OHS strategy; and • evaluate the outcomes with an emphasis on critical control management. 	<p>To set corporate direction and lead development of strategy for OHS by applying high-level strategic and/or specialist skills.</p> <p>To work with Boards, executives, senior managers and others to lead OHS strategy and to initiate, develop and maintain activities for a safe and healthy work environment.</p> <p>To ensure an emphasis on critical risk and identification and management of critical controls.</p> <p>To develop and implement a strategy for communicating the strategy and framework throughout the business.</p> <p>To represent the company to external agencies.</p>	
Typical reporting line	<p>OHS manager in larger organizations.</p> <p>In smaller organizations: MD/CEO, Operations Manager</p>	<p>General manager OHS or operations manager in larger organizations.</p> <p>In smaller organizations: MD/CEO, Operations Director.</p>	<p>CEO</p> <p>Operations Director</p> <p>Head of Risk</p>	
Professional parameters				
Autonomy	Works under broad direction, independently or as part of a team, on activities that may be self-initiated; is accountable for meeting milestones and timelines.	Makes high-level independent judgments; plans judgements with guidance only in the most complex situations.	Makes high-level independent judgments regarding technical and strategic OHS issues and operates with a high level of autonomy to conceptualize, plan, implement and evaluate major OHS projects.	Wide scope of authority to operate within the constraints of the business plan.
Influence/leadership	Builds internal and external relationships to create influence, mentors line managers and site OHS personnel to achieve OHS objectives.	<p>Develops relationships with senior management, OHS Professionals and Practitioners to create/influence OHS-related policy, objectives and strategy and to act as a change agent to support improvement in OHS.</p> <p>Liaises with industry leaders and OHS regulatory agencies.</p>	<p>Develops long-term strategic relationships with the senior management team and operational managers and builds relationships with external stakeholders, including industry bodies and OHS regulatory agencies. Directs OHS strategy across the organization and sometimes the industry and the profession.</p> <p>Creates a vision, sets and communicates goals and acts as a catalyst and key influencer in driving change.</p> <p>Engages, influences and mentors internal and external stakeholders as a functional expert.</p>	

Table 3: Position profiles for OHS Practitioner (Continued)

		Professional Level 1	Professional Level 2	Professional Level 3
Complexity	Performs an extensive range and variety of complex technical and professional activities requiring application of fundamental principles in a wide and often unpredictable range of contexts.	Creatively performs a range of highly complex OHS activities and leads on formulation, implementation and evaluation of OHS strategy, often working with diverse cultures and changing business environments.	Applies a deep knowledge of OHS together with management and leadership skills in a range of diverse, complex and often developing and unfamiliar contexts to lead formulation, implementation and evaluation of OHS strategy.	Leads teams and projects often requiring integration of multiple concepts, technologies and activities within diverse cultures.
Business and organizational skills	Understands the relationship between OHS and operations as well as the wider organizational requirements. Manages own activities to meet work/project timelines.	Understands the wider organizational and business environment and the impact on management of OHS as well as the interdependency of OHS and operations. Personal planning and organizational skills to meet work/project deadlines. Engages to support availability of required resources. May manage an OHS group.	Brings an international perspective and an awareness of the broader business and operational environment to OHS management. Uses planning and organizational skills to manage a group to meet work/project deadlines. Collaborates to ensure required resources are available. May manage an OHS group.	
Knowledge and skills				
Knowledge	Demonstrates familiarity with and understanding of a broad range of OHS concepts with depth of technical knowledge in some hazard areas.	Demonstrates understanding of advanced theoretical OHS concepts and technical knowledge within a systematic and coherent OHS body of knowledge. Recognized as an expert within and outside the organization.	Demonstrates advanced and integrated understanding of a complex body of OHS knowledge, including an extended understanding of recent developments as a basis for critical thinking.	
Analyze and evaluate information	Applies cognitive and technical skills to access, review, critically evaluate and consolidate information from a range of external and internal sources to inform OHS practice.	Applies cognitive and technical skills to access, analyze and evaluate information to think critically, generate and evaluate complex ideas and inform OHS strategy and practice.	Applies cognitive, technical and creative skills to investigate and analyze complex information, concepts and theory and to reflect critically to generate new knowledge and apply it to professional practice.	
Problem solving	Applies critical thinking, information gathering, communication skills and judgment to identify and analyze routine and sometimes complex OHS problems to generate practical evidence-informed solutions while taking into account legislation and industry standards. Applies cognitive, technical and communication skills to justify proposed solutions from an OHS perspective.	Applies critical thinking, information gathering, problem solving and communication skills and judgment to identify and analyze complex OHS problems to generate innovative, practical evidence-informed solutions while taking into account legislation and industry standards and the organizational environment. Applies cognitive, technical and communication skills to justify and prioritize proposed solutions while taking into account OHS principles as well as organizational, legal, industry and other relevant factors. Applies problem-solving techniques to develop an integrated strategy for OHS and related management issues.	Applies critical reflection to synthesize information and established theory from a variety of sources to generate creative, practical evidence-informed solutions to OHS problems within a business environment while taking into account legislation and industry standards. Applies knowledge of the OHS evidence base, logical reasoning and a business evaluation process to explain the risks and benefits of a range of options and to justify recommendations while taking into account current thinking in OHS, commercial factors, industry standards and legislation.	

	Professional Level 1	Professional Level 2	Professional Level 3
Transmit knowledge, skills and ideas	<p>Selects and appropriately applies a broad range of written, oral and nonverbal communication skills and formats to explain technical information and concepts to a range of workplace audiences.</p> <p>Uses technology effectively to prepare reports for a range of workplace audiences.</p>	<p>Interprets and tailors information to communicate knowledge and ideas to workplace, professional and regulatory audiences using appropriate communication strategies and formats.</p> <p>Prepares reports for a range of audiences using appropriate data displays.</p>	<p>Challenges existing thinking and practices while acknowledging perspectives of others.</p> <p>Interprets and tailors technical and organizational information, complex concepts and theories to communicate complex concepts and ideas to a range of senior management, specialist and non specialist audiences using a variety of appropriate communication strategies.</p> <p>Prepares reports for company's internal and external audiences and, where required, prepares regulatory standards.</p>
Soft skills	Uses communication, engagement and mentoring skills to develop OHS capability of site operations and OHS personnel.	<p>Uses communication and engagement skills, including negotiation and conflict management skills, to initiate, promote and support change.</p> <p>Uses mentoring skills to develop OHS capability of site operational and OHS personnel.</p>	Uses communication, engagement and leadership skills to be a trusted advisor and mentor to senior managers and to initiate and support change.
Qualifications			
Qualification level	AQF 7/EQF 6	AQF 8/EQF 6	AQF 9/EQF 7

4. Activities

The OHS Capability Framework defines the role of the OHS Professional and the OHS Practitioner in terms of OHS-related activities. These activities are divided into two levels:

- Dimensions – providing the scope of the distinguishing boundaries of the roles.
- Domains – describing fields of activity within the dimensions.

A third level of detail in the form of explanatory comments for the domain is incorporated in the online tools developed to support implementation of the Framework.¹⁸

Seven dimensions are used to outline the roles of the OHS Professional and OHS Practitioner:

1. Systems management approach
2. Organizational culture and its impact on OHS
3. OHS risk management processes
4. Measurement and evaluation of OHS performance
5. Knowledge management
6. Communication, engagement and influence
7. Professional and ethical practice

The activity statements may be used in many contexts:

- As a mapping tool to confirm key OHS activities are addressed by one or more OHS specialists in the organization
- As a detailed OHS duty statement as part of a position description
- To create a shared understanding of the role by incumbents, line and senior managers and others
- As a basis for performance appraisals
- To identify areas for role expansions and further development of an incumbent.



INSHPO has developed job position builder and self-assessment tools to support use of the Framework for these purposes. Information on access and availability of the tools is available at www.inshpo.org.

It should be noted that the scope of application of the activities is different for the OHS Professional compared with that of the OHS Practitioner.

OHS Professional: Across the organization, including site, divisional/regional and corporate; may include local, national or global roles.

OHS Practitioner: Usually at a site (workplace) level of an SME or a section or site within a large organization. Thus, when considering the Practitioner activities, each activity should be read as applying “at the local level.”

¹⁸ Tools available at www.inshpo.org.

4.1 Activities

Table 4: Activity matrix for OHS Practitioners and OHS Professionals

		OHS Practitioner	OHS Professional
	Dimension	Domain	Dimension
1 Systems management approach	Support the implementation of a systems approach to OHS.	<p>1.1 Support implementation of and monitor compliance with defined OHS management system, policy and procedures. Builds relationships as a basis for influence¹⁹ with managers to understand the limitations of written safety rules and procedures and to favor control through workplace and process design, critical controls and proven competence.</p> <p>1.2 Contribute to identification of required resources and work within resource framework.</p> <p>1.3 Support and motivate line management and supervisors to provide OHS leadership and through them to influence workers to give appropriate priority to OHS in relation to other operational objectives.</p> <p>1.4 Facilitate, monitor and provide feedback on implementation of operational plans to address and improve the controls of OHS hazards, their associated risks and related costs.</p>	<p>Lead and support the development and implementation of a systems approach to OHS.</p> <p>Advise on and facilitate commitment of appropriate resources for sustainably managing OHS.</p> <p>Support and motivate senior management and through them, all people in the organization, to provide OHS leadership and to give appropriate priority to OHS in relation to other business objectives.</p> <p>Facilitate development and utilization of strategic and operational plans to address and improve the control of OHS hazards, their associated risks and related costs.</p>
2 Organizational culture and its impact on OHS	Support line managers, supervisors and workers on methods to foster and monitor a positive OHS culture.	<p>2.1 Facilitate, monitor and support management practices and projects aimed at achieving an organizational culture focused on OHS. Recognize and support the increase in the maturity of the organization's culture and its effect on how to function effectively as an OHS Practitioner.</p> <p>2.2 Support implementation of change processes to improve OHS, being aware of the cross-functional impacts of change.</p> <p>2.3 Engage with supervisors and middle managers to develop responsibility and leadership in OHS.</p> <p>2.4</p>	<p>Lead and support key influencers, including managers, on strategies to foster an organizational culture that prioritizes OHS.</p> <p>Facilitate the identification and management of OHS implications of organizational change and influence the change process to minimize adverse effects and maximize positive effects of the change.</p> <p>Engage with managers at all levels in the organization to develop their responsibility and leadership in OHS.</p> <p>Engage with stakeholders and others to promote innovation in managing OHS.</p>

¹⁹ The term “builds relationships as a basis for influence” is used in preference to “coaching” as coaching implies a power role rather than empowering. See Section 2 for an explanation of the importance of the terminology.

Table 4: Activity matrix for OHS Practitioners and OHS Professionals

		OHS Practitioner	OHS Professional
Dimension	Domain	Dimension	Domain
3 OHS risk management processes	Support implementation and maintenance of routine OHS risk assessment, control and management processes in normal operations and emergencies.	3.1 Conduct hazard identification in well-known tasks in sometimes dynamic conditions.	Lead development of OHS risk management processes and facilitate and support their implementation and maintenance.
		3.2 Use technical, human factors and other knowledge to identify causation, consequences, possible risk controls, including critical controls, and potential failure in controls related to the hazards of well-known tasks in sometimes dynamic conditions.	Use technical, human factors and other theoretical knowledge, to research, review and interpret information on hazards to identify causation, consequences, possible risk controls, including critical controls, and potential failure in controls related to all relevant hazards in all lifecycle phases.
		3.3 Contribute to identification of risk factors and analysis and prioritization of OHS risks associated with known and routine work processes in familiar environments.	Develop and lead processes to identify risk factors and to analyze and prioritize OHS risks with an emphasis on critical risk.
		3.4 Provide technical information to inform risk analysis and risk estimation processes.	Provide technical, organizational and strategic information to inform risk analysis and risk estimation processes.
		3.5 Provide information on the requirements for compliance with detailed, operational-level OHS-related regulations and standards.	Provide advice on the strategy requirements for compliance with OHS-related laws and standards.
		3.6 Take appropriate steps to stop unsafe work.	Ensure processes are in place to empower workers to stop work considered an immediate threat to health or safety.
		3.7 Advise on hazard control for routine and sometimes complex tasks.	Advise on cost-effective and efficient hazard controls, including critical controls, and risk minimization/mitigation strategies, taking a lifecycle approach.
		3.8 Advise on and support implementation of efficient controls, including critical controls for effective risk minimization/mitigation strategies.	Support identification and implementation of critical controls for effective OHS risk management and OHS risk minimization.
		3.9 Prepare and check specifications and orders for the purchase of preventive and protective safety equipment and other physical risk controls.	
		3.10 Coordinate the issue, testing, availability, use and replacement of personal protective and/or emergency equipment.	
		3.11 In liaison with operational staff, write and keep up-to-date procedures for safe working.	Oversee, evaluate and approve the collection, development and implementation of safety procedures and documentation, including for emergency situations.
		3.12 Write and keep up-to-date documentation for emergency planning.	

		OHS Practitioner	OHS Professional
Dimension	Dimension	Domain	Domain
4 Measurement and evaluation of OHS performance	Support monitoring and measurement of OHS performance.	<p>4.1</p> <p>4.2 Build relationships with supervisors and managers to develop their understanding as to why work as done may differ from documented procedures.</p> <p>4.3 Implement activities to monitor OHS performance.</p> <p>4.4 Monitor the integrity and effectiveness of controls, with an emphasis on critical controls, to identify actual and potential failures in control.</p> <p>4.5 Coordinate workplace inspection activities to monitor for the presence and use of hazard controls.</p> <p>4.6 Monitor and provide feedback on compliance with safety-critical procedures.</p> <p>4.7 Prepare and use equipment to undertake basic measurement and monitoring of the work environment.</p> <p>4.8 Contribute to monitoring of employees and contractors' personnel and their compliance with OHS requirements.</p> <p>4.9 Monitor and report on the effectiveness of risk management and OHS management processes.</p> <p>4.10 Support processes and procedures to investigate, analyze, record and report on incidents and non-conformities indicating failures or inadequacies of controls.</p> <p>4.11 Participate in OHS hazard and management system audits.</p> <p>4.12 Conduct and analyze emergency drills.</p> <p>4.13 Support periodic management reviews to systematically assess, monitor and identify areas for improvement in the OHS management system and OHS culture.</p> <p>4.14 Make recommendations to improve OHS, including addressing identified nonconformities to improve OHS compliance.</p>	<p>Develop and lead processes for monitoring, measuring and evaluating OHS performance.</p> <p>Design and implement processes for monitoring OHS performance at strategic and operational levels.</p> <p>Monitor the effectiveness of hazard and risk controls with an emphasis on critical controls, including the identification of actual and potential failure in controls.</p> <p>Monitor, evaluate and report on the effectiveness of risk management and OHS management processes at operational and strategic levels.</p> <p>Implement, monitor and evaluate processes and procedures to investigate, analyze and report on incidents and nonconformities indicating failures or inadequacies of controls. Mentor operations personnel to participate in incident investigations.</p> <p>Develop, manage, evaluate and improve OHS audit processes and conduct OHS hazard and management system audits.</p> <p>Develop, evaluate and manage emergency and disaster preparedness.</p> <p>Support and structure periodic management reviews to systematically assess, monitor and identify areas for improvement in the OHS strategy, management system and OHS culture.</p> <p>Make recommendations to address identified issues and improve OHS management and risk minimization.</p>

Table 4: Activity matrix for OHS Practitioners and OHS Professionals

		OHS Practitioner	OHS Professional
	Dimension	Domain	Dimension
5 Knowledge management	Implement processes for knowledge collection and management to enable positive OHS outcomes.	<p>5.1 Use and maintain data management systems for collecting information relevant to OHS.</p> <p>5.2 Collect and keep up-to-date relevant internal and external OHS information, regulations, standards, good practice and OHS record systems.</p> <p>5.3</p>	<p>Develop and implement processes for knowledge collection and management to enable positive OHS outcomes.</p> <p>Collect, collate and interpret information to develop business cases for OHS improvement strategies and activities.</p> <p>Analyze and apply data to identify trends and information to monitor and report OHS performance.</p>
6 Communication engagement and influence	Communicate, engage with and influence line and middle management, supervisors and workers to mitigate risk and optimize worker health and safety	<p>6.1 Implement OHS-related communication and consultation processes with stakeholders.</p> <p>6.2 Contribute to the preparation of training and information material to develop OHS skills and awareness in workers and supervisors.</p> <p>6.3 Conduct and support OHS training and skill development related to OHS for supervisors and workers.</p> <p>6.4 Develop relationships with supervisors and middle managers to support their development in OHS related to their role.</p> <p>6.5 Provide varied and up-to-date OHS information to middle managers, supervisors and workers.</p> <p>6.6</p>	<p>Communicate, engage with and influence decision-makers and other stakeholders to mitigate risk and optimize worker health and safety.</p> <p>Lead and facilitate OHS knowledge and skill development, training and understanding of OHS responsibilities, obligations and actions required to meet legal and risk management requirements.</p> <p>Support the development and delivery of OHS training for all levels in the organization.</p> <p>Develop relationships with managers to support OHS development relevant to their roles.</p> <p>Develop relationships with managers to support OHS development relevant to their roles.</p> <p>Communicate and liaise with business partners, OHS regulators and other external bodies on behalf of the organization.</p> <p>Be a “trusted advisor” to influence management decision making to consider OHS implications.</p>
		<p>6.7 Be a “trusted advisor” to influence middle managers, supervisors and workers.</p>	

		OHS Practitioner	Domain	Dimension	Domain	OHS Professional
	Dimension		Domain		Dimension	
7 Professional and ethical practice	Apply legal and ethical standards to practice	7.1 Comply with laws and regulations governing practice of OHS and related activities.	Promote and apply professional and ethical standards to practice	Promote and comply with laws and regulations governing professional practice of OHS and related activities.	Promote and apply professional and ethical standards to practice	Promote and comply with laws and regulations governing professional practice of OHS and related activities.
	7.2	Make decisions and judgments impartially based on standards, legislative requirements, OHS knowledge and practice.	Make decisions and judgments impartially based on scientific evidence and verifiable theoretical and professional knowledge and practice.	Make decisions and judgments impartially based on scientific evidence and verifiable theoretical and professional knowledge and practice.	Make decisions and judgments impartially based on scientific evidence and verifiable theoretical and professional knowledge and practice.	Make decisions and judgments impartially based on scientific evidence and verifiable theoretical and professional knowledge and practice.
	7.3	Operate under the (direct or indirect) direction of an OHS Professional to implement OHS projects and risk controls and management processes.	Operate with a level of autonomy to conceptualize, plan, implement and evaluate OHS projects and risk control and management processes.	Operate with a level of autonomy to conceptualize, plan, implement and evaluate OHS projects and risk control and management processes.	Operate with a level of autonomy to conceptualize, plan, implement and evaluate OHS projects and risk control and management processes.	Operate with a level of autonomy to conceptualize, plan, implement and evaluate OHS projects and risk control and management processes.
	7.4	Observe relevant codes of conduct provided by professional associations and other assessment and advisory bodies nationally.	Observe relevant codes of conduct provided by professional associations and other assessment and advisory bodies nationally and internationally.	Observe relevant codes of conduct provided by professional associations and other assessment and advisory bodies nationally and internationally.	Observe relevant codes of conduct provided by professional associations and other assessment and advisory bodies nationally and internationally.	Observe relevant codes of conduct provided by professional associations and other assessment and advisory bodies nationally and internationally.
	7.5	Ensure that employers and others who may be affected by their activities are aware of their levels of OHS competence. Seek specialist support and advice where necessary and appropriate.	Ensure that clients, employers and others who may be affected by their activities are aware of their levels of professional competence. Seek specialist support and advice where necessary and appropriate.	Ensure that clients, employers and others who may be affected by their activities are aware of their levels of professional competence. Seek specialist support and advice where necessary and appropriate.	Ensure that clients, employers and others who may be affected by their activities are aware of their levels of professional competence. Seek specialist support and advice where necessary and appropriate.	Ensure that clients, employers and others who may be affected by their activities are aware of their levels of professional competence. Seek specialist support and advice where necessary and appropriate.
	7.6	Ensure currency of own OHS technical knowledge and knowledge of industry practice.	Ensure currency of own OHS conceptual understanding, technical knowledge and industry practice.	Engage in evidence-informed reflective practice, evaluative activities and professional discussion with a view to testing ideas through peer appraisal.	Engage in evidence-informed reflective practice, evaluative activities and professional discussion with a view to testing ideas through peer appraisal.	Engage in evidence-informed reflective practice, evaluative activities and professional discussion with a view to testing ideas through peer appraisal.
	7.7	Seek out and form a collaborative relationship with an OHS Professional mentor.	Provide leadership to OHS Practitioners.	Provide leadership in OHS and act as an exemplar of good OHS practice and behavior to peers, coworkers and the public.	Provide leadership in OHS and act as an exemplar of good OHS practice and behavior to peers, coworkers and the public.	Provide leadership in OHS and act as an exemplar of good OHS practice and behavior to peers, coworkers and the public.
	7.8	Provide leadership in OHS and act as an exemplar of good OHS practice and behavior to peers, coworkers and the public				

5. Knowledge

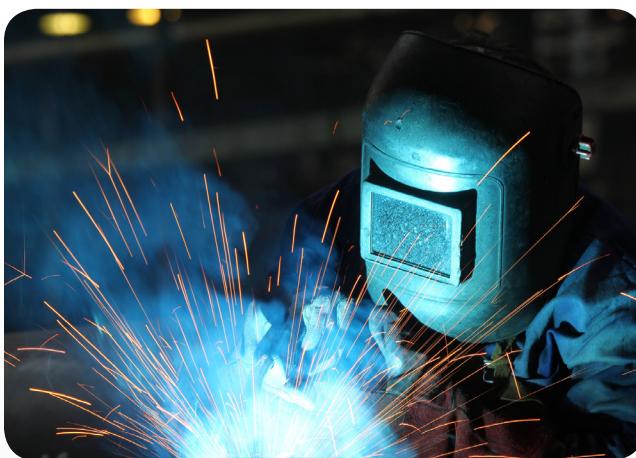
A conceptual framework together with specific technical knowledge is essential for both the OHS Professional and OHS Practitioner. Such a knowledge base supports innovation, flexibility and openness to new and advancing thinking about OHS. It enables OHS specialists to develop and adapt their professional practice to changing demands of business and society and also enables them to mentor and develop others. As shown in Section 5.1, considerable overlap exists in the knowledge topics for the OHS Professional and OHS Practitioner with differences in the depth and breadth as applicable to the Professional and the Practitioner.

Such a knowledge base will be gained through a combination of formal education and experience. It is not expected that an OHS Professional or OHS Practitioner would gain the knowledge through education alone.

The knowledge matrix of the Framework is described under six areas with each area having many categories with illustrative generic topics indicating the intended scope of the knowledge category. This is described at a high, generic level to allow flexibility in the way it is applied to suit the legal and OHS context in individual countries.

The knowledge areas:

- A: Hazards and risks
- B: Hazard and risk controls
- C: Safety and health management
- D: Professional role and functioning
- E: Underlying technical and behavioral disciplines
- F: Underlying management science.



This classification is not the same as that used for the dimensions and domains described in Section 3 on Activities. While Section 3 discusses tasks, this section describes the underlying knowledge needed to perform those tasks, which means a move to a classification that resides in the underlying disciplines and subjects constituting OHS. For each activity in the roles, many pieces of knowledge are relevant, and each piece may underpin several, if not many, of the activities. This produces a many-to-many mapping or matrix, which is not made explicit in this document. Between this section on knowledge and the activities described in Section 4, a many-to-many mapping is also found between the headings A to D of applied knowledge and the underlying disciplines of headings E and F.

The conceptual and technical knowledge under these areas must be integrated to enable the OHS Professional and Practitioner to develop a “mental model” to inform his or her OHS practice.

The illustrative topics in the knowledge matrix are annotated with an indicative range to reflect the expected nature and complexity of the knowledge of the OHS Professional and OHS Practitioner. The coding is based on the following four **knowledge levels**, which address depth, breadth, maturity and integration of the knowledge. These levels are informed by and developed from Bloom’s hierarchy of educational objectives.²⁰

Level	Knowledge
1	Awareness: Understands the need for and general principles of application of the knowledge.
2	Routine application: Applies the knowledge to routine, well-known situations, with depth in some areas.
3	Comprehensive application: Integrates, adapts and applies the knowledge to all relevant areas and situations.
4	Creative mastery: Applies the theoretical concepts and applied knowledge critically and creatively to new situations.

The lower number in the range reflects the minimum level of knowledge expected of an effective OHS Practitioner or Professional with the higher number providing a target for development. In providing a target level, there is no intention to create a “ceiling.” The actual target knowledge level will depend on qualifications, personal interest as well as the organizational and industry context. A single

²⁰ See Bloom, B.S., Engelhart, M.D., Furst, E.J., Hill, W.H., & Krathwohl, D.R. (Eds) (1956). *Taxonomy of Educational Objectives: Handbook 1 Cognitive domain*. New York: David McKay.

number rather than a range indicates that while the level of technical knowledge required for practice may be similar, the scope of application or the complexity of application may be greater. Where an overlap exists in the range of knowledge levels across the Practitioner and the Professional role, the application of the knowledge by the Practitioner will usually be site-based while the Professional will have a broader role.

As with the activities, when considering required knowledge, the scope of activities and so the application of knowledge is as follows for each of the two roles:

OHS Professional: Across the organization, including site, divisional/regional and corporate; may include local, national or global roles.

OHS Practitioner: Usually at a site (workplace) level of an SME or a section or plant of a large organization.

The knowledge component of the Framework should not be seen as a standalone item. An integrated knowledge base (or mental model) is essential for providing informed advice, so it would be too complex to map individual knowledge topics to specific activities. However, the required breadth and depth of knowledge should take into account the scope of relevant activities as well as specific requirements related to the role that may be organization- or country-specific.

The knowledge framework supports the applications described for the position profiles and the activity matrix. More specifically, the knowledge matrix may be used:

- In recruitment, as a basis for specifying applicants' required qualifications
- In assessing job applicants as part of assessment tests or interview questions
- As part of a detailed duty statement or position description
- As a basis for performance appraisals
- To inform development of internal training programs
- To identify areas for OHS Professional development

²¹ See www.inshpo.org.



The knowledge matrix has been incorporated into the online tools developed by INSHPO to support implementation of the framework.²¹

The OHS knowledge matrix is limited to specific OHS-related knowledge. It does not address industry or process-specific knowledge. It should be recognized that to operate as an effective OHS Professional or Practitioner, one must understand the technical and cultural aspects of the industry in which s/he practices, with practical knowledge of the industry and its processes being more important for the Practitioner.

5.1 Knowledge matrix

Table 5: Knowledge matrix for OHS Practitioners and OHS Professionals

Code	Knowledge category	Illustrative generic topics	OHS Practitioner	OHS Professional
A Hazards and risks				
1.	Causation – Health & Psychosocial ²²	• Chronic and cumulative impacts	1-2	3
		• Multifactorial nature of health determinants	1-2	3
		• Work-related impacts on health	2-3	3
		• Concept and models of “healthy work” and “wellness”	1-3	3
		• Models of causation of fatigue and stress	1-2	2-3
		• Mental illness in the workplace	1-2	2-3
2.	Causation – Safety	• Models of accident ²³ causation (linear to complex)	2-3	3-4
3.	Causation – Environmental ²⁴	• Models of environmental harm (air, water, soil)	0-1	2-3
4.	Risk	• Difference between hazard and risk	2-3	4
		• Risk as a complex concept (uncertainty)	2-3	3-4
		• Prioritization of critical risk	2-3	3-4
		• Qualitative/quantitative aspects of risk)	1-2	3-4
5.	Hazards	• Process and task safety analysis methods (e.g., Job Safety Analysis)	2-3	3-4
		• Complex hazard analysis methods (i.e., FMEA, HAZOP, Fault Tree, Bowtie, etc.)	0-1	2-4
		• Knowledge of exposure standards and their application	2-3	2-3
		• For each specific hazard: ²⁵	2-3	3-4
		○ Basic underpinning science to understand the hazard’s behavior, how it causes damage and how it can be controlled		
		○ Relevant definitions, units and methods of measurement		
		○ Mechanisms of damage, injury and health outcomes, including those leading to material unwanted events		
		○ How the hazard is used/occurs in the occupational environment and specific industries		
		○ Risk factors		
		• Hazard-specific legislation and standards	2-4	2-3
B Hazard and risk controls				
6.	Control – Principles	• Time sequence of pre-event, event and post-event and relevant control/intervention points	2-3	3-4
		• Hierarchies of control, barriers and defenses, critical controls, requisite variety of controls	2-4	4
		• Criteria for critical controls and principles of critical control management ²⁶	1-3	3-4
		• Health protection and promotion ²⁷	1-2	3
		• Hazard-specific strategies	2-3	3

²² The degree to which safety and health professionals are involved with the control of psychosocial hazards differs from country to country. The degree of involvement will govern how much knowledge is required under these headings.

²³ The term “accident” in this document includes incidents (sometimes called dangerous situations, near-misses or precursors) leading toward but stopping short of harm.

²⁴ The degree to which OHS personnel are involved in the control of environmental hazards differs from country to country. The degree of involvement will govern how much knowledge is required under these headings.

²⁵ See Section 7.

²⁶ See International Council on Mining and Metals (ICMM). (nd). Health and Safety Critical Control Management: Good practice guide. www.icmm.org.

²⁷ The degree to which OHS personnel are involved with health promotion differs from country to country.

Code	Knowledge category	Illustrative generic topics	OHS Practitioner	OHS Professional
7.	Control – Process and workplace design	• Concept of inherent safety and engineered safe design	1-3	3
		• Process and equipment instrumentation and control	2-3	2-3
		• Human factors and ergonomics (including physical and cognitive ergonomics)	2-3	2-4
		• User-centered design	1-3	3
		• Workplace layout	2-3	3
		• Impact of technology, including automation	1-2	3
8.	Control – Barriers	• Types of barriers (machinery guarding, access control, separation, containment, work skills, PPE, etc.)	2-4	3-4
		• Role and limitations of barriers	2-4	3-4
		• Barrier maintenance requirements	2-4	3-4
		• Establishing and managing a PPE program (including selection, fitting and maintenance)	3-4	3-4
9.	Control – Procedural and administrative controls	• Systems of work	1-3	3-3
		• Handovers, permit to work systems, lock out/tag out	2-4	2-3
		• Inspection, maintenance and testing	2-4	2-3
		• Competent workers: recruitment and selection processes, fitness for work	1-2	3-4
		• Competent workers: training; needs analysis; development and documentation of training; multimodal delivery; assessment of individuals and training programs; mentoring	1-4	3
		• Rules and procedures, factors affecting procedural compliance	2-4	3-4
		• Licensed operators	2-4	2-3
		• Outsourcing, contractor management	2-3	3
		• Supply chain management	1-3	3
		• Liaison with external agencies: chain of command	2	3-4
10.	Mitigation – Emergency preparedness	• Relevant standards	2-4	3
		• Detection and mitigation methods	2-4	3
		• Development of emergency preparedness plans and arrangements	2-3	3-4
		• Implementation of preparedness, including testing of preparedness	2-4	2-3
		• Recovery, including organization continuity plans and management	1-2	3-4
		• Provision of first-aid services	2-3	1
11.	Mitigation – Health Impacts ²⁸	• Provision of medical services	1-2	2-3
		• Workers' compensation and local legal requirements	0-1	1-3
		• Injury management, case management and claims management	0-1	1-3
		• Role of work and the workplace in worker recovery (establishing and managing a return-to-work program)	1-2	2-3

²⁸ The degree to which OHS professionals are involved with these health mitigations differs from country to country. The degree of involvement will govern how much knowledge is required under these headings.

Table 5: Knowledge matrix for OHS Practitioners and OHS Professionals (Continued)

Code	Knowledge category	Illustrative generic topics	OHS Practitioner	OHS Professional
C. Safety & health management				
12.	Safety management	<ul style="list-style-type: none"> • OHS management systems (structure and elements, relevant standards, limitations) • Processes for implementing a critical control management program • System safety • Systems of work, work procedures and instructions • Decision making • Theories of safety management, including new and emerging theories and insights • Relationship of safety management systems to environmental, quality and business management approaches • OHS roles and responsibilities • Principles of assessing and managing contractors 	2-3	4
13.	Organizational culture	<ul style="list-style-type: none"> • Organizations as complex sociotechnical systems • Concepts of national, organizational and safety culture • Relationship between employee (manager and workforce) behavior, organizational culture, safety culture and safety climate • Organizational maturity • Role of leadership • Healthy work • Limitations of the role and use of safety and health incentives, awards and competitions in relation to culture 	1-2	3-4
14.	Law, regulation and societal context ²⁹	<ul style="list-style-type: none"> • International regulatory context • Regional and national regulatory context • Legal principles and comparative legal systems and regulatory frameworks • Criminal and civil law and effect on OHS • OHS-specific law • Compliance and enforcement policies and strategies in the jurisdiction • Workers' compensation law • Product liability law • Basics of contract law • Best practice as it affects due diligence, common law, standard of care and regulation • ILO, ISO and other international standards • Market and societal influences 	0-1	2-4
15.	Risk assessment and decision making on risk	<ul style="list-style-type: none"> • Sources of information on risk • Methods of risk assessment and their application for specific hazards • Qualitative methods for estimating levels of risk, including issues and limitations • Quantitative methods for estimating levels of risk, including issues and limitations • Defining acceptable levels of risk (legal requirements, internal standards, ALARP)³⁰ 	2-3	3-4

²⁹ The degree to which OHS professionals are involved with these legal aspects differs from country to country depending on their legal and compensation systems. The degree of involvement will govern how much knowledge is required under these headings.

³⁰ As Low As is Reasonably Practicable.

Code	Knowledge category	Illustrative generic topics	OHS Practitioner	OHS Professional
		<ul style="list-style-type: none"> Risk and decision making (individual and organizational decision-making processes, balancing priorities, risk perception and risk communication, role of workforce, trades unions, public and other stakeholders) Risk management standards (process, application and limitations) Risk perception and risk communication, role of workforce, trade unions, public and other stakeholders 	1-2	3-4
			2-3	4
			1-3	3-4
16.	Monitoring, evaluating and validating controls	<ul style="list-style-type: none"> Potential sources/modes of failure in controls Risk control and hazard monitoring techniques (including inspections and maintenance) Structures and processes for managing critical controls Work environment monitoring (required equipment and programs) Investigation methods (incidents, nonconformities) Role of health surveillance and health risk assessments³¹ Auditing (hazard audits, compliance audits, OHSMS audits, protocols and procedures, relevant standards) Principles for selecting performance measures Key performance indicators (qualitative, quantitative, lead and lag)³² Criteria and processes for monitoring and validating critical controls Benchmarking Basic principles of quantitative and qualitative evaluation methodologies 	2-3	3-4
			2-4	3
			2-3	3-4
			2-3	3
			2-3	3-4
			1-2	2-3
			2-3	3
			1-2	4
			2-3	3-4
			2-3	3-4
			1-2	3-4
			2-3	3-4
17.	OHS information management	<ul style="list-style-type: none"> Sources of OHS information (internal and external) Workplace requirements for OHS information External agencies' requirements for information Documentation requirements (organizational and external) Systems for managing OHS information Data collection by research, investigation, interview and observation 	2-3	4
			2-4	4
			1-3	4
			3-4	4
			2-3	4
			1-2	3-4
18.	Communication and consultation	<ul style="list-style-type: none"> Organizational channels of communication (formal and informal, internal and external and barriers to communication) Consultative structures (e.g., safety committees) Participatory management as it relates to OHS Models of communication, influence and factors contributing to influence Conflict management 	2-4	3-4
			3-4	4
			2-4	4
			2-3	3-4
			2-3	3
19.	Change management	<ul style="list-style-type: none"> Strategies for defining problems Strategies for analyzing and understanding problems (e.g., affinity diagrams, flow charts, cause and effect, system diagrams) Potential for change to affect work equipment, work processes and work environment Psychology of change as it relates to individuals Innovation and change management processes (planning, consulting, promoting, reviewing and consolidating including role of Practitioner/Professional) 	1-3	3-4
			1-3	3-4
			2-3	3-4
			2-3	3-4
			1-3	3-4

³¹ While health surveillance and health monitoring are the purview of the health professional, the generalist OHS specialist should have an understanding of the role of these activities and be able to engage with health professionals on these activities.

³² See International Council on Mining and Metals (ICMM). (2012). Overview of leading indicators for occupational health and safety in the mining industry. www.icmm.org.

Table 5: Knowledge matrix for OHS Practitioners and OHS Professionals (Continued)

Code	Knowledge category	Illustrative generic topics	OHS Practitioner	OHS Professional
D. Professional role and functioning (See also skills)				
20.	Ethics and professional practice	• Corporate governance	1-2	3-4
		• Corporate Social Responsibility and sustainability	1-2	3-4
		• Roles, responsibilities and rights ³³	2-4	3-4
		• Professional ethics and codes of conduct	3-4	4
		• Models of ethical practice and ethical decision making ³⁴	1-3	3-4
		• Professional role (independence, impartiality, confidentiality, competence, evidence base, collegiality, practice within competence)	3	4
		• Professional liability and indemnity	1-2	3-4
		• Theories of communication, advocacy, persuasion and documentation	2-3	3-4
		• Setting up and participating in team work	3	3-4
		• Research methodologies relating to OHS and work-based research	0-1	3-4
E. Underlying technical, human and social sciences				
21.	Systems	• Systems as a concept, including variability	1-3	3
		• Systems thinking in an OHS context	0-2	2-4
22.	Human as a biological system	• Basic human biology	2	2
		• Physiology as it relates to work	1-2	2
		• Biomechanics as it relates to work	2	2-3
		• Cumulative compared with acute impacts on the body	1-2	3
		• Basic principles of toxicology	1-2	2
23.	Individual Psychology	• Psychobiology (structure and function of the brain and nervous systems, role of endocrine systems in response)	1-2	2
		• Cognitive psychology (situation awareness, memory, cognitive biases in decision making)	1-2	2-3
		• Behavioral psychology (learning, conditioning, motivation)	2-3	3
		• Communication	2-3	3
		• Human error	2-3	3
		• Fatigue and stress	1-3	3
		• Impact of aging on work capability	1-3	3
24.	Social psychology	• Perceiving individuals (attribution theory and biases)	1-2	3
		• Self in relation to others (social comparison theory)	1-2	2-3
		• Group membership (development of groups, in-groups and out-groups; social identity and self-categorization theories; stereotypes, prejudice and discrimination, contact hypothesis)	1-3	3
		• Groups as they relate to team work	2-3	3
		• Norms and group pressure to conform	1-3	3
		• Task performance (decision-making biases; group task performance)	1-2	2-3
		• Power (sources of power, compliance, inequality, obedience to authority)	1-2	3

³³ Including right to know and right to refuse unsafe work.

³⁴ These should take national differences into account.

		<ul style="list-style-type: none"> Attitudes and behavior (e.g., theory of planned behavior; cognitive dissonance theory, persuasion theory) Understanding and resolving conflict (competition and cooperation; conflict management styles; distributive and procedural justice) 	1-2	2-3
25.	Statistics and quantitative analysis	<ul style="list-style-type: none"> Basic arithmetic and algebraic manipulation Units of measurement, prefixes and logarithmic scales Data display and reporting Probability, sampling distribution and confidence levels Basic statistical measures, including sources of error Principles of survey methods Principles of epidemiological analysis Principles of designing assessments of intervention effectiveness 	2-4	4
			2-4	4
			3-4	4
				3
			1	3
			1	3
				2-3
			0-2	3-4
26.	Science and engineering	<ul style="list-style-type: none"> Basic science and technology to understand the damage and control mechanisms of hazards covered; types of machinery and processes; and their functioning and hazards Standards relating to “state of the art and best available technology” Use of technical standards Use of hazard monitoring equipment (e.g., noise, ventilation, chemicals, etc.) Interpretation of results of hazard monitoring 	2-3	4
			1-2	3
			2-3	3
			2-3	2
			1-2	3
F. Underlying management sciences:				
27.	Organizations	<ul style="list-style-type: none"> Governance arrangements Impact of reporting structures Organizational structure, departments' functions, roles and responsibilities, authority and accountability Organizational goals and strategy Resource allocation processes Principles of change management 		3
				3
			2-3	3-4
			2-3	4
			1-2	3-4
			2-3	4
28.	Project management	<ul style="list-style-type: none"> Key requirements for successful projects Project conceptualization and design Project planning, budgeting, implementation and monitoring Project evaluation 	0-1	3-4
				3-4
			0-2	3-4
			0-2	3-4
29.	Strategic and operational planning	<ul style="list-style-type: none"> Managing self Operational and strategic planning Managing others Human resources management/management of people 	2-3	4
			0-2	3-4
				3-4
				2-4
30.	Business imperatives	<ul style="list-style-type: none"> The Organization operating as a commercial entity with a range of stakeholders and attendant pressures, including costing and budgeting in their own area of responsibility Financial literacy in a business context, including budgeting Business case development and cost-benefit analysis Legislation and organizational arrangements relating to terms and conditions of employment, employee rights, consultation and participation Understanding of external environment, including legal and market pressures 	0-2	3-4
			0-2	3
				3
			1-2	3
				3-4

6. Skills

Personal and professional skills are vital attributes for effective practice as an OHS Professional or Practitioner. Such skills have been identified as a priority in recruitment and a key area of professional development for OHS personnel.

A “Bloom”³⁵ style taxonomy approach has been used to describe skills in the Framework, which are presented in three sections: personal skills, professional practice skills and professional technical skills.

As with the knowledge requirements, the skills have been annotated with a code to indicate the expected skill levels for the OHS Professional as compared to the OHS Practitioner. The skill code is based on the four **skill levels**, which also reflect Bloom’s taxonomy. However, while definitions of the skill levels are similar to those for the knowledge requirements, important subtle differences reflect the nature of skills application.

Application of skill

Level	Knowledge
1	Awareness: Understands the need for and general principles of skill application.
2	Routine application: Applies the skill independently to well-known, routine tasks and to nonroutine tasks under supervision.
3	Skilled application: Adapts and applies the skill independently and effectively, also to nonroutine tasks.
4	Creative mastery: Applies the theoretical concepts and the practiced skill critically and creatively to new situations.



When considering required skills, the application of skills is as follows for each of the two roles:

OHS Professional: Across the organization, including senior management and external agencies, including regulators and industry bodies.

OHS Practitioner: Within the organization with a focus on middle management, supervisor and workers. The skills are structured to support self-assessment and peer or manager assessment. They may also provide a basis for training and development, either formal or informal.

The skills are structured to support self-assessment and peer or manager assessment. They may also provide a basis for training and development, either formal or informal.

³⁵ Anderson, L.W., Krathwohl, D.R., Airasian, P.W., Cruikshank, K.A., Meyer, R.E., Pintrich, P.R., Raths, J., & Whittrock, M.C. (2001). *A Taxonomy for Learning, Teaching and assessing: a revision of Bloom's taxonomy of educational objectives*. New York: Longman.

6.1 Skills matrix

Table 6: Skills matrix for OHS Practitioners and OHS Professionals

Skill		Performance criteria	Practitioner	Professional	
A. Personal skills					
A1	Verbal Communication	Selects an appropriate time, format and venue taking into account the nature of the communication and the other person's needs.	2-4	3-4	
		Focuses by giving full attention to the speaker. Puts the speaker at ease. Uses nonverbal cues appropriately.	2-4	3-4	
		Uses language appropriate to the nature of the communication and the other person; is clear and concise and uses questioning techniques as appropriate.	2-4	3-4	
		Respects people by demonstrating empathy, open-mindedness and respect. Looks at issues from others' perspective. Lets go of preconceived ideas. Builds on others' perspectives to enhance effectiveness and quality of outcomes.	2-4	3-4	
		Encourages and receives feedback with an open mind, listens, questions for clarification, reflects on the implications for own behavior and expresses appreciation for the feedback.	2-4	3-4	
		Gives feedback , including praise, which is timely, specific and focused on behaviors, not the person.	2-4	3-4	
		Confirms and closes communication by summarizing and clarifying the outcomes.	2-4	3-4	
A2	Professional presentation skills	Documents by completing forms and preparing reports and documentation that are easily understood by the intended audience, demonstrating appropriate selection and structuring of information and correct spelling, grammar and industry-specific terminology.	2-4	3-4	
		Prepares professional reports and documentation that are easily understood by the intended audience, demonstrating appropriate selection and structuring of information and writing style.	2-3	3-4	
		Customizes information in a variety of formats and communication channels that take into account audience characteristics, needs and cultural sensitivities.	2-3	3-4	
		Uses information technology effectively in preparing OHS documentation.	2-3	3-4	
		Uses information technology effectively in communicating OHS information.	2-3	3-4	
		Makes presentations (informal and formal) that clearly communicate the topic to a range of audiences, using a variety of media.	2-4	3-4	
		Engages and works with the interests of people from a range of disciplines, backgrounds and workgroups.	2-4	3-4	
B. Professional Skills					
B1 Evidence-based practice					
B1.1	Knowledge management	Accesses information from a range of workplace sources using digital skills and a variety of strategies.	2-4	3-4	
		Uses literacy skills to read and interpret OHS legislation, codes of practice, guidance material, policies and procedures.	2-3	3-4	
		Investigates and assesses the credibility of sources and information reliability and validity.	2-3	3-4	
		Collates information to identify common themes.	2-3	3-4	
		Critically evaluates and validates results through challenging information, concepts and theories.	1-3	2-4	
		Synthesizes information to identify implications for practice.	1-2	2-4	
		Applies information, concepts and theories to inform practice.	2-3	3-4	

Table 6: Skills matrix for OHS Practitioners and OHS Professionals (Continued)

Skill		Performance criteria	Practitioner	Professional
B1.2	Problem solving and critical thinking	Identifies a problem(s) by application of informal and structured strategies.	2-3	3-4
		Analyzes and applies a range of information gathering and analytical strategies to clarify the nature of the problem and the contributing factors.	1-2	3-4
		Generates potential solutions by applying consultative and creative processes.	2-3	3-4
		Evaluates systematically and considers potential solutions against preset criteria in a consultative process.	2-3	3-4
		Applies consultative and creative processes for evaluating potential solutions.	2-3	3-4
		Decides on a strategy based on evaluation.		3-4
		Implements by supporting change management processes to implement selected solutions.	2-3	3-4
		Reviews outcomes using prescribed processes to monitor the implementation and effectiveness of solutions implemented.	2-3	3-4
		Seeks information and feedback to evaluate and validate the effectiveness of solutions.	2-3	3-4
		Improves outcomes by recommending/taking action based on the review's outcomes to optimize OHS outcomes.	2-3	3-4
B1.3	Evidence-based practice	Accesses OHS handbooks and standards for evidence to inform OHS practice.	2-4	3
		Accesses OHS research papers and reports for evidence to inform OHS professional practice.	1-2	3-4
		Designs workplace-based studies that have rigor and ethical integrity to clarify issues and contributing factors and to evaluate the effectiveness of interventions.	0-1	2-4
		Implements action by applying information from OHS handbooks and standards as part of OHS practice.	2-4	3
		Systematically implements workplace-based research studies.	0-1	3-4
		Analyzes and evaluates OHS research papers, reports and workplace studies for evidence to inform OHS professional practice.		3-4
		Synthesizes OHS research information and outcomes to inform OHS practice.		3-4
B2 Influence				
B2.1	Engaging	Interacts to develop relationships with operational staff and consultative group(s).	3-4	3-4
		Networks by identifying champions and other stakeholders (including managers, technical staff, employees, consultants, regulators and local residents) and creates positive relationships.	2-4	3-4
		Informs others by providing technically correct information informed by conceptual models that takes into account current OHS thinking.	2-3	3-4
		Empathizes with others by identifying their needs and perspective, including the organizational environment. Generates their respect.	2-3	3-4
		Provides advice that others can understand and takes into account the needs and perspectives of others and the organizational environment.	2-4	3-4
		Relates to others by becoming a trusted resource through establishing credibility and demonstrating reliability.	3-4	3-4
		Provides support to others by both actions and communications.	2-4	3-4
		Takes action to implement strategy and management decisions.	2-4	3-4

	Skill	Performance criteria	Practitioner	Professional
B2.2	Mentoring and being mentored	Engages to establish a relationship as a basis for learning and development of another.	2-4	3-4
		Clarifies by engaging with others as a proposed mentor or mentee to clarify their current knowledge, skill and perspective basis, their goals and factors that may affect goal achievement.	2-4	3-4
		Engages to share knowledge, skills, information and perspective to foster others' personal and professional development.	2-3	3-4
		Supports others by providing constructive feedback to enable transferable learning.	2-3	3-4
		Reflects and engages with others to review their learnings and strategy for achieving the goals.	2	3-4
B3	Leadership			
B3.1	Teamwork	Understands different traits, styles and team roles.	2-4	3-4
		Understands and recognizes the steps in group/team formation and supports the maturation of a group to form an effective team.	1-3	3-4
		Supports discussion to ensure that team members have a common understanding of the goals and individual roles and a shared commitment to the activity.	1-3	3-4
		Shares information and ideas openly and willingly inside and outside formal team processes and offers assistance to others in performing their tasks.	2-4	3-4
		Respects and listens to the opinion of others, has patience and respects and trusts others to complete their assigned tasks.	2-4	3-4
		Actively participates in team processes and demonstrates commitment by attending meetings and other activities.	3-4	3-4
		Demonstrates flexibility in own role in team, and openness to the opinions of others and in dealing with changing conditions.	3-4	3-4
		Identifies the phenomenon of "group think" and challenges the group to open the discussion to apply broader thinking.	1-3	3-4
B3.2	Negotiation and management of conflict	Understands that differences of opinion are a healthy part of management decision making and, in that context, affirms their own position.	2-3	3-4
		Ensures that all pertinent facts and context of the situation are known.	2-4	3-4
		Identifies the background and reason for differences in opinion and respects those differences.	2-3	3-4
		Applies interpersonal skills of listening, questioning and reflecting to facilitate discussion to clarify goals and common ground.	2-3	3-4
		Facilitates discussion to identify alternative strategies and compromises, which may achieve greater benefit for all concerned than original positions.	2-3	3-4
		Confirms clearly the agreement reached so that all involved have a similar understanding of the outcome.	2-3	3-4

Table 6: Skills matrix for OHS Practitioners and OHS Professionals (Continued)

Skill		Performance criteria	Practitioner	Professional
B3.3	Personal Leadership	Shows self-awareness by identifying own leadership style and the need for both further development and situational adaptation to enhance leadership capabilities.	2-3	3-4
		Demonstrates up-to-date knowledge on OHS and current issues and an ability to explain complex/technical topics in a way that others can understand.	2-4	3-4
		Creates an imperative for change and a clear vision to bring people along.	1-3	3-4
		Engages people in the process, comprehends and accepts emotions, feelings and others' perspective and is able to build rapport with and empathy for others.	2-3	3-4
		Demonstrates assertiveness where needed in subtle, constructive ways.	2-3	3-4
		Leads by setting an example and by demonstrating confidence, optimism and interest in others, which, in turn, generates confidence in others.	3-4	3-4
		Generates the respect of others.	3-4	3-4
		Builds consensus and constructive problem solving.	2	3-4
		Provides support to people to make them comfortable, bases change on learning and enables people to have ownership of the outcome.	2-4	3-4
		Perseveres and recognizes that change takes time.	2-4	3-4

Skill		Performance criteria	Practitioner	Professional
B4	Management			
B4.1	Project management and management of change	<p>Identifies and clearly communicates the need for improvement and change and the benefits of change.</p> <p>Identifies options for change to address needs and realize benefits.</p> <p>Applies consultative processes to developing implementation plan.</p> <p>Defines and clarifies scope of change, parameters, objectives, budget, stakeholders, roles and timelines and interaction with other processes and activities.</p> <p>Identifies key players and establishes the project team to facilitate change and give people ownership of outcomes.</p> <p>Collaborates to develop project plan, identify project risks and required resources and potential impact on other groups.</p> <p>Uses formal processes to plan, sequence and prioritize own activities and activities for implementation of change.</p> <p>Identifies and assesses appropriate project management tools, develops operational plans, accesses required resources, defines and communicates and delegates roles and responsibilities. Establishes monitoring processes. Influences, mentors and supports others in managing change.</p> <p>Administers, establishes and maintains required recordkeeping systems, including financial recordkeeping and project progress.</p> <p>Plans, prepares and conducts structured meetings with clear outcomes.</p> <p>Administers by using digital systems and programs to assist planning and tracking of communications for implementation activities.</p> <p>Communicates with all affected groups to support change.</p> <p>Completes activities, including required reports.</p> <p>Administers approved processes for monitoring the outcomes of change processes.</p> <p>Reviews and evaluates project processes and outcomes against project scope and plan with input from project team. Documents lessons learned. Recognizes input of others and shares credit for achievements.</p>	2-3	3-4
B4.2	Managing others ³⁶	<p>Identifies and clarifies the role of others from both strategic and operational perspectives with an understanding of what is reasonable given the circumstances.</p> <p>Plans and allocates appropriate resources and allocation of personnel to OHS and company priorities.</p> <p>Reviews and monitors the processes and outputs of those being managed.</p> <p>Creates opportunities to support and develop the capability of those being managed.</p>	2-3	3

³⁶ Others include OHS staff and contractors. Not all OHS professionals will be involved in managing others. The degree of involvement will govern the knowledge and scope of the skill required under this heading.

Table 6: Skills matrix for OHS Practitioners and OHS Professionals (Continued)

Skill		Performance criteria	Practitioner	Professional
B5 Professional and ethical practice				
B5.1	Professional practice	Manages own activities and is reliable with regard to agreed deliverables and timelines.	3-4	3-4
		Undertakes formal and informal CPD ³⁷ activity to ensure currency and capability.	3-4	3-4
		Works effectively as a leader or as part of a team while respecting differences and diversities.	2-3	3-4
		Recognizes the value of professional, enterprise and industry collaboration.	2-3	3-4
		Consults by seeking information or informed opinion from others as part of decision making.	3-4	3-4
		Seeks further advice within the OHS profession and across other professions and stakeholders as appropriate.	3-4	3
		Engages to establish a relationship with a higher-level/peer professional or other appropriate mentor as a basis for self-development.	3-4	3-4
		Engages in professional discussion with peers with a view to advance professional practice.	3-4	3-4
		Engages appropriately and effectively with technology to access information, collect and collate information, produce documents and engage with people in appropriate ways. This includes providing information, communicating as well as developing and delivering training.	2-3	3-4
		Applies formal and informal processes to reflect on current and past practice to identify areas for improvement or development.	2-3	3-4
B5.2	Ethical Practice	Recognizes the limits of own knowledge, skills and experience.	3-4	4
		Complies with relevant codes of conduct and laws.	4	4
		Treats all individuals with respect and maintains confidentiality of personal and business-sensitive information.	4	4
		Examines critically the ethics of proposed courses of action.	2-4	4
		Provides unbiased and impartial advice.	4	4
		Provides advice informed by technical and conceptual knowledge.	3-4	4
		Acts with honesty and probity. Sets example of good OHS behavior.	4	4
		Takes responsibility for and demonstrates the conceptual and technical underpinning of own practice.	3-4	4
		Recognizes when disclosure and whistleblowing may be appropriate and takes action in an ethical manner.	2-3	4
C. OHS professional technical skills				
C1	Training	Identifies knowledge and skill gaps and training needs for specific groups.	2-4	3
		Develops appropriate learning outcomes to address knowledge and skill gaps.	2-4	3
		Prepares appropriate training material to address learning outcomes and defined competencies.	2-4	3
		Organizes appropriate planning processes and logistics to deliver training to specified groups.	2-4	3
		Communicates effectively during training with a range of people.	3-4	3
		Engages with supervisors, workers and managers to help them acquire and use their skills and knowledge for improving OHS.	3-4	3
		Assesses learning outcomes for individuals and provides feedback.	3-4	3
		Evaluates training outcomes and makes modifications as necessary.	2-4	3

³⁷ Continuous Professional Development: structured ways to develop competence and keep it up to date.

Skill		Performance criteria	Practitioner	Professional
C2	Surveying, inspecting and auditing	Systematically observes the workplace, state of technology, processes and behaviors to evaluate their conformity with requirements.	2-4	3
		Designs a comprehensive monitoring system to collect and analyze information to evaluate risk controls and OHS management processes.	0-2	3-4
		Interviews by meeting with, collecting information from and discussing OHS with all levels of employees and managers to gain insight into their work practices, beliefs and attitudes toward OHS.	2-3	3-4
		Combines and critically assesses information from inspections, surveys and audits to determine the state of OHS.	2-3	3-4
		Contributes to the development of written and oral reports to managers as a basis for decisions about improvement.	1-3	3-4
		Provides formal written and oral reports to stakeholders and decision makers as a basis for improvement.	1-3	3-4
C3	Investigating	Coordinates/supports identification and collection of evidence associated with accidents and non-conformances to determine the sequence of events and assist in uncovering causal links.	2-3	3-4
		Interviews leads/participates in collection of information from people involved in the development of the accident/event, while avoiding hindsight and other biases and ensuring that conclusions are soundly based.	2-3	3-4
		Collates the evidence about the development of the incident/accident in a critical way to understand and chart that scenario and its links to underlying practices and conditions.	0-2	3-4
		Supports the analysis and synthesis of evidence to understand and chart scenarios and links to risk controls.	0-3	3-4
		Recognizes the difference between superficial and underlying causes of incidents and unsafe conditions. Identifies ineffective and missing barriers and assesses possible improvements to avoid the scenario revealed and any other related scenarios.	2-3	3-4
		Synthesizes data and evidence to develop recommendations for future prevention.	2-3	4
		Writes and communicates reports to meet organizational standards on accidents with nonfatal potential.	2-4	3-4
		Contributes to the reports of OHS and other professionals on accidents with fatal potential.	1-3	3-4
		Writes and communicates reports to organizational, professional and legal standards.	2-3	3-4
		Recommends based on appropriate use of analysis improvements in the work processes and organizational environment.	2-3	3-4
		Implements/supports changes to implement recommendations.	2-4	3-4
		Collects information as a basis for monitoring effectiveness of recommendations.	2-4	3-4
C4	Measuring and monitoring	Assesses the implementation of recommended controls and their effectiveness.	2-4	3-4
		Selects the appropriate tools to assess the organization's processes, workplaces and working environments.	0-2	3-4
		Applies appropriate tools to gather information to assess the effectiveness of risk controls.	2-3	3
		Implements appropriate strategies and tools to gather information as per agreed performance criteria as part of assessing the risks and effectiveness of hazard controls.	2-4	3
		Uses technology to analyze data to identify trends.	2-3	3-4
		Interprets data to evaluate OHS performance, the factors affecting performance and areas for improvement.	2-3	3-4
		Uses technology to develop graphical presentations as part of reporting.	2-3	3-4

7. Hazard types managed

While some hazards are more in the OHS specialist's core knowledge, others are seen as peripheral and may require expertise from specialist professions, such as occupational hygiene, occupational medicine, organizational/occupational psychology, ergonomics, fire protection, environmental engineering and management or other related specialties. In such cases, the role of the OHS Professional and Practitioner will be to liaise with those professional specialists for more complex problems or ones requiring deeper knowledge.

The following table lists the hazards that an OHS specialist could be expected to manage. It is based on the energy-damage categorization developed by Haddon³⁸ and Gibson.³⁹ It reflects the origins of the OHS professional in technological disciplines and machinery hazards, with a later, but fairly universal, move to include chemical and working environment hazards. Some countries have seen a move also into psychosocial (e.g., stress, conflict, harassment, etc.) and/or environmental (e.g., pollution, biodiversity, degradation, etc.) hazards.

OHS specialists need to understand the nature of the hazards; their modes of entry into or effect on the body (and mind) of those exposed and on the physical environment, their mechanisms of harm to people and other assets (including exacerbating circumstances, e.g., working alone, pregnancy, etc.). They also need to understand the methods of assessment and measurement of the risk associated with each hazard as well as the principles and practice of prevention and control relevant to each of the hazards in the core of the OHS specialist role for a particular organization, country or jurisdiction. These constitute the underpinning science related to each of the various hazards. The depth and breadth of this underpinning knowledge will vary with the Professional or Practitioner role and the complexity of the hazard and context. Some indications of the underpinning science are given in Section 5 on the knowledge underpinning practice. This document does not allocate different categories of hazards to Professionals and Practitioners.

³⁸ Haddon Jr, W. (1973). *Energy Damage and the Ten Counter-Measure Strategies*. Human Factors Journal, August.

³⁹ Gibson, J.J. (1961). The contribution of experimental psychology to the formulation of the problem of safety—a brief for basic research. In: *Behavioral Approaches to Accident Research*. New York: Association for the Aid of Crippled Children, pp 77-89.



Table 7: OHS hazard types

Gravitational, including specialized technical and construction hazards
Falls from height
Falling objects, lifting equipment
Hazards about which an OHS professional may be expected to have the knowledge and skills to advise management
Slips, trips and falls on level and stairs
Biomechanical
Manual lifting/handling
Postural (including seating)
Repetitive strain
Electrical and (electro)magnetic
Chemical
Toxic, carcinogenic, teratogenic and corrosive chemicals, fibers and dusts
Nanoparticles
Sensitizing agents (for asthma, dermatitis)
Fire and explosion
Thermal environment
Heat and cold
Hot work
Noise
Vibration (whole body & hand/arm)
Equipment under pressure/pressure vessels
Powered plant
Flying objects ejected from machinery processes
Entanglement in moving parts of static machinery, (incl. robots)
Use of portable power tools
Moving plant/vehicles & occupational road use
Specialized technical & construction hazards
Subsidence and collapse
Structural failure
Psychosocial hazards ⁴⁰
Workload/stress
Fatigue
Impacts on wellness
Bullying and harassment
Aggression (people/animals)
Violence at work ⁴¹
Hazards of the natural environment (earthquake, flooding, storm, tornado, etc.)
Confined spaces (including asphyxiant atmospheres)
Drowning/diving
Higher than atmospheric pressure
Computer/monitor screen, including control rooms
Biological hazards (including occupational pathogens)
Infectious diseases
Indoor air quality (spores, pollens, prions, etc.)
Ionizing radiation
Nonionizing radiation (including lasers, UV, radio frequency, etc.)
Hazards of the natural environment (earthquake, flooding, storm, tornado, etc.)

This list addresses generic OHS hazards that may occur in a range of locations and activities for which OHS Professionals and Practitioners have responsibilities. Users of this document will need to tailor the list of hazards to address the circumstances of their locations and activities, which fall under their responsibility or influence.

⁴⁰ The degree of involvement of OHS professionals with the control of psychosocial hazards differs from country to country. The degree of involvement will govern how much knowledge is required under these headings.

⁴¹ Workplace violence is treated as a security/criminal issue rather than an OHS issue in some jurisdictions.

OHS Practitioner

OHS Professional

Reactive

Pathological

Does not care about safety

Implement basic strategies to fulfil legal requirements

Persuade organization to move up maturity hierarchy

Cares about safety only after something goes wrong

Implement basic strategies for accident investigation and response

Educate in need for systematic approach to OHS management

Calculative Bureaucratic

Cares about safety in a rule-bound way.

Implement a systematic approach to managing OHS risk.

Develop systematic approach to managing risk.

Proactive

Cares about safety and is searching for innovative strategies beyond rules.

Implement and enforce a systematic approach to managing OHS risk. Prepare and implement handover of core tasks to line management.

Develop and evaluate / improve strategies for critical risk control. Develop/customize industry best practice management tasks to suit organization.

Generative

Cares about safety and fully understands interactions between social and technical aspects of work and is mature enough to mindfully rule-guided.

Monitor and report OHS performance against objectives. Support line management in all OHS tasks

Develop strategies to learn from work-as-done to adapt procedures to the dynamics of real life.

Develop strategies to fully integrate OHS risk control into the business and enable learning from sociotechnical aspects of work. Support and motivate senior management in their overall OHS management tasks.



INSHPO is the global voice for the occupational health and safety profession and acts as a forum for international collaboration among professional organisations to improve health and safety at work.



Models of Causation: Safety

Core Body of Knowledge for the
Generalist OHS Professional



Safety Institute
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Australian OHS Education
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auspices of the **Health and Safety Professionals Alliance**



The Technical Panel established by the Health and Safety Professionals Alliance (HaSPA) was responsible for developing the conceptual framework of the OHS Body of Knowledge and for selecting contributing authors and peer-reviewers.
The Technical Panel comprised representatives from:



The Safety Institute of Australia supported the development of the OHS Body of Knowledge and will be providing ongoing support for the dissemination of the OHS Body of Knowledge and for the maintenance and further development of the Body of Knowledge through the Australian OHS Education Accreditation Board which is auspiced by the Safety Institute of Australia.



Synopsis of the OHS Body of Knowledge

Background

A defined body of knowledge is required as a basis for professional certification and for accreditation of education programs giving entry to a profession. The lack of such a body of knowledge for OHS professionals was identified in reviews of OHS legislation and OHS education in Australia. After a 2009 scoping study, WorkSafe Victoria provided funding to support a national project to develop and implement a core body of knowledge for generalist OHS professionals in Australia.

Development

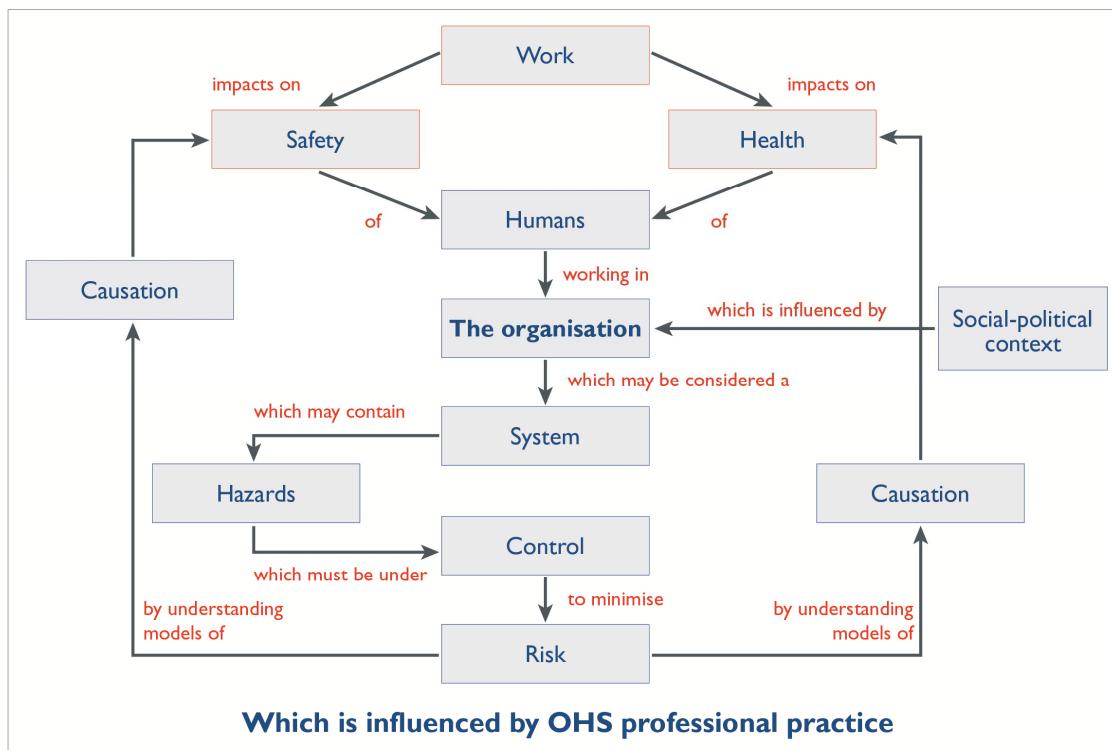
The process of developing and structuring the main content of this document was managed by a Technical Panel with representation from Victorian universities that teach OHS and from the Safety Institute of Australia, which is the main professional body for generalist OHS professionals in Australia. The Panel developed an initial conceptual framework which was then amended in accord with feedback received from OHS tertiary-level educators throughout Australia and the wider OHS profession. Specialist authors were invited to contribute chapters, which were then subjected to peer review and editing. It is anticipated that the resultant OHS Body of Knowledge will in future be regularly amended and updated as people use it and as the evidence base expands.

Conceptual structure

The OHS Body of Knowledge takes a *conceptual* approach. As concepts are abstract, the OHS professional needs to organise the concepts into a framework in order to solve a problem. The overall framework used to structure the OHS Body of Knowledge is that:

Work impacts on the **safety** and **health** of humans who work in **organisations**. Organisations are influenced by the **socio-political context**. Organisations may be considered a **system** which may contain **hazards** which must be under control to minimise **risk**. This can be achieved by understanding **models causation** for safety and for health which will result in improvement in the safety and health of people at work. The OHS professional applies **professional practice** to influence the organisation to bring about this improvement.

This can be represented as:



Audience

The OHS Body of Knowledge provides a basis for accreditation of OHS professional education programs and certification of individual OHS professionals. It provides guidance for OHS educators in course development, and for OHS professionals and professional bodies in developing continuing professional development activities. Also, OHS regulators, employers and recruiters may find it useful for benchmarking OHS professional practice.

Application

Importantly, the OHS Body of Knowledge is neither a textbook nor a curriculum; rather it describes the key concepts, core theories and related evidence that should be shared by Australian generalist OHS professionals. This knowledge will be gained through a combination of education and experience.

Accessing and using the OHS Body of Knowledge for generalist OHS professionals

The OHS Body of Knowledge is published electronically. Each chapter can be downloaded separately. However users are advised to read the Introduction, which provides background to the information in individual chapters. They should also note the copyright requirements and the disclaimer before using or acting on the information.

Models of Causation: Safety

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Core Body of Knowledge for the Generalist OHS Professional

Core Body of Knowledge for the Generalist OHS Professional

Models of Causation: Safety

Abstract

Understanding accident causation is intrinsic to their successful prevention. To shed light on the accident phenomenon, over the years authors have developed a plethora of conceptual models. At first glance they seem as diverse and disparate as the accident problem they purport to help solve, yet closer scrutiny reveals there are some common themes. There are linear models which suggest one factor leads to the next and to the next leading up to the accident and there are complex non linear models which hypothesise multiple factors are acting concurrently and by their combined influence, lead to accident occurrence. Beginning with a look at the historical context, this chapter reviews the development of accident causation models and so the understanding of accidents. As this understanding should underpin OHS professional practice the chapter concludes with a consideration of the implications for OHS professional practice.

Key words

accident, occurrence, incident, critical incident, mishap, defence/s, failure, causation, safety

Note from the Body of Knowledge Technical Panel and the authors of this chapter:

The development of theories and modeling of accident causation is a dynamic field with the result that there is often a gap between the theoretical discussion and practice. This chapter has taken on the difficult task of collating a selection of models and presenting them in a format that should facilitate discussion among OHS professionals. It is considered 'version 1' in what should be a stimulating and ongoing discussion. It is anticipated that this chapter will be reviewed in the next 12 months.

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1 Introduction

Accidents have been broadly defined as:

a short, sudden and unexpected event or occurrence that results in an unwanted and undesirable outcome ¹ and must directly or indirectly be the result of human activity rather than a natural event² (Hollnagel, 2004, p. 5)

Accident prevention is the most basic of all safety management paradigms. If safety management is effective, then there should be an absence of accidents. Conversely, if accidents are occurring then effective safety management must be absent. Therefore, understanding how accidents occur is fundamental to establishing interventions to prevent their occurrence. A simple nexus it would seem, yet the reality is accidents are complex events, seldom the result of a single failure, and that complexity has made understanding how accidents occur problematic since the dawn of the industrial revolution.

In an attempt to unravel the accident causation mystery, over the years authors have developed a plethora of conceptual models. At first glance they appear to be as diverse and disparate as the accident problem they purport to help solve, yet closer scrutiny reveals there are some common themes. There are linear models which suggest one factor leads to the next and to the next leading up to the accident, and complex non linear models which hypothesise multiple factors are acting concurrently and by their combined influence, lead to accident occurrence. Some models have strengths in aiding understanding how accidents occur in theory. Others are useful for supporting accident investigations, to systematically analyse an accident in order to gain understanding of the causal factors so that effective corrective actions can be determined and applied.

Accident models affect the way people think about safety, how they identify and analyse risk factors and how they measure performance ¹ they can be used in both reactive and proactive safety management ¹ and many models are based on an idea of causality ... accidents are thus the result of technical failures, human errors or organisational problems. Hovden, Albrechtsen and Herrera, 2010, p.855).

This chapter builds on the discussion of hazard as a concept¹ to trace the evolution of thinking about accident causation through the models developed over time thus it forms a vital foundation for developing the conceptual framework identified as an essential component of professional OHS practice². The importance of models of causation to OHS professional practice is highlighted by Kletz:

To an outsider it might appear that industrial accidents occur because we do not know how to prevent them. In fact, they occur because **we do not use the knowledge that is available**. Organisations do not learn from the past ¹ and the organisation as a whole forgets. (1993.)

¹ See *OHS BoK Hazard as a Concept*

² See *OHS BoK Practice: Model of OHS Practice*

2 Historical context

Perhaps the earliest well documented application of accident causation knowledge is that of the Du Pont company which was founded in 1802 with a strong emphasis on accident prevention and mitigation. Klein (2009), in a paper entitled ‘Two Centuries of Process Safety at DuPont’ reported that the company founder E.I. Du Pont (1772 – 1834) had once noted ‘we must seek to understand the hazards we live with’. The design and operation of Du Pont explosives factories, over the next 120 years, were gradually improved as a result of a consistent effort to understand how catastrophic explosions were caused and prevented. In that period many of the principles of modern accident prevention theory were formulated. By 1891 management accountability for safe operations was identified as a necessary precept to such an extent that the original Du Pont plant design included a requirement for the Director’s house, in which Du Pont himself, his wife and seven children lived, to be constructed within the plant precinct, a powerful incentive indeed to gain an understanding of accident causation. As described by DeBlois (1915), the first head of DuPont’s Safety Division, elimination of hazards was recognised as the priority in 1915 and a goal of zero injuries was also established at that time. Amongst a list of other safety management initiatives which would still be considered appropriate in today’s companies’ safety programs, the Du Pont Safety Division was established in their Engineering Department in 1915 and carried out plant inspections, conducted special investigations and analysed accidents.

Accident research was also reported as being part of the work of the British Industrial Health Board between the two World Wars (Surry, 1969). Surry cited Greenwood and Woods’ (1919) statistical analysis of injuries in a munitions factory and Newbold’s (1926) study of thirteen factories which also reviewed injuries purported to be the first research work into industrial accidents. Various other studies around the time (Osborne, Vernon & Muscio 1922; Vernon 1919; 1920; Vernon, Bedford & Warner 1928) examined previously unresearched areas of working conditions such as humidity, work hours, workers age, experience and absenteeism rates. Surry also reported that the appearance of applied psychologists influenced research studies to focus on ‘human output’ and during the 1930s attention was directed towards the study of individual accident proneness. Surry noted that ‘pure accident research declined after 1940 while the study of performance influencing factors has flourished’ (p. 17).

The history of accident modelling itself can be traced back to the original work by Herbert W. Heinrich, whose book *Industrial Accident Prevention* in 1931 became the first major work on understanding accidents. Heinrich stated that his fundamental principles for applying science to accident prevention was that it should be: (1) through the creation and maintenance of an active interest in safety; (2) be fact finding; and (3) lead to corrective action based on the facts (Heinrich, 1931, p. 6). Heinrich’s book, now in its 5th edition, attempted to understand the sequential factors leading to an accident and heralded in what can be termed a period of simple sequential linear accident modelling. While sequential

linear models offered an easy visual representation of the path of causal factor development leading to an accident they did not escape the widely accepted linear time aspect of events which is tied into the Western cultural world-view of past, present and future as being part of everyday logic, prediction and linear causation (Buzsáki, 2006, p. 8).

3 Evolution of models of accident causation

The history of accident models to date can be traced from the 1920s through three distinct phases (Figure 1):

- Simple linear models
- Complex linear models
- Complex non-linear models. (Hollnagel, 2010).

Each type of model is underpinned by specific assumptions:

- The simple linear models assume that accidents are the culmination of a series of events or circumstances which interact sequentially with each other in a linear fashion and thus accidents are preventable by eliminating one of the causes in the linear sequence.
- Complex linear models are based on the presumption that accidents are a result of a combination of unsafe acts and latent hazard conditions within the system which follow a linear path. The factors furthest away from the accident are attributed to actions of the organisation or environment and factors at the sharp end being where humans ultimately interact closest to the accident; the resultant assumption being that accidents could be prevented by focusing on strengthening barriers and defences.
- The new generation of thinking about accident modelling has moved towards recognising that accident models need to be non-linear; that accidents can be thought of as resulting from combinations of mutually interacting variables which occur in real world environments and it is only through understanding the combination and interaction of these multiple factors that accidents can truly be understood and prevented. (Hollnagel, 2010).

Figure 1 portrays the temporal development of the three types of model and their underpinning principle. The types of model, their evolution, together with representative examples are described in the following sections.

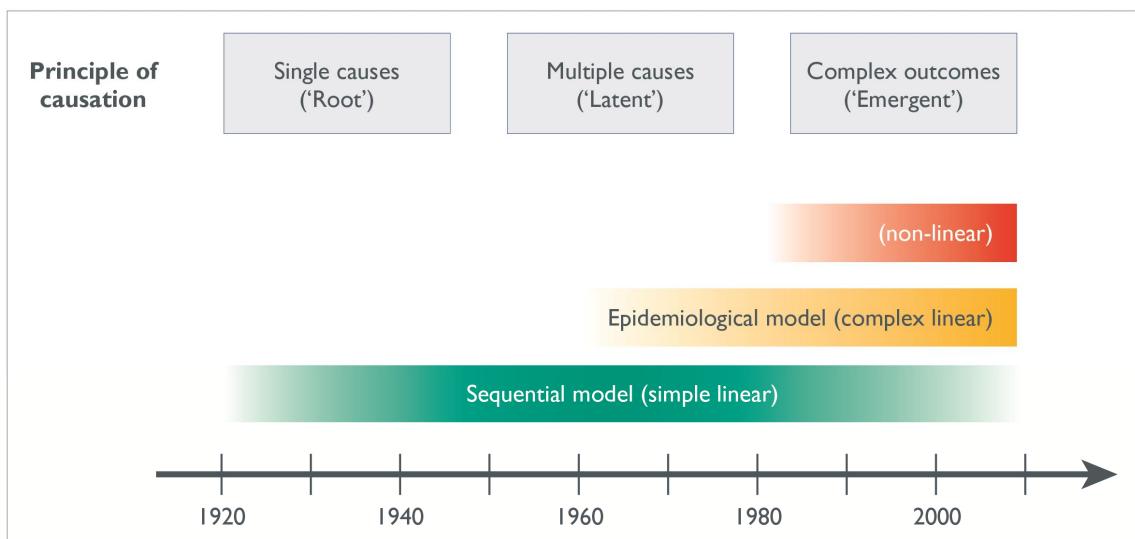


Figure 1: Summary of a history of accident modelling (Hollnagel, 2010, slide 7)

3.1 Simple sequential linear accident models

Simple sequential accident models represent the notion that accidents are the culmination of a series of events which occur in a specific and recognisable order (Hollnagel, 2010) and now represent the ‘commonest and earliest model of accident research ... that describing a temporal sequence’ where the ‘accident is the overall description of a series of events, decisions and situations culminating in injury or damage .. a chain of multiple events’ (Surry, 1969).

3.1.1 Heinrich’s Domino Theory

The first sequential accident model was the ‘Domino effect’ or ‘Domino theory’ (Heinrich, 1931). The model is based in the assumption that:

the occurrence of a preventable injury is the natural culmination of a series of events or circumstances, which invariably occur in a fixed or logical order – an accident is merely a link in the chain. (p. 14).

This model proposed that certain accident factors could be thought of as being lined up sequentially like dominos. Heinrich proposed that an:

an accident is one of five factors in a sequence that results in an injury – an injury is invariably caused by an accident and the accident in turn is always the result of the factor that immediately precedes it. In accident prevention the bullseye of the target is in the middle of the sequence – an unsafe act of a person or a mechanical or physical hazard (p. 13).

Heinrich’s five factors were:

- Social environment/ancestry
- Fault of the person
- Unsafe acts, mechanical and physical hazards
- Accident
- Injury.

Extending the domino metaphor, an accident was considered to occur when one of the dominos or accident factors falls and has an ongoing knock-down effect ultimately resulting in an accident (Figure 2).

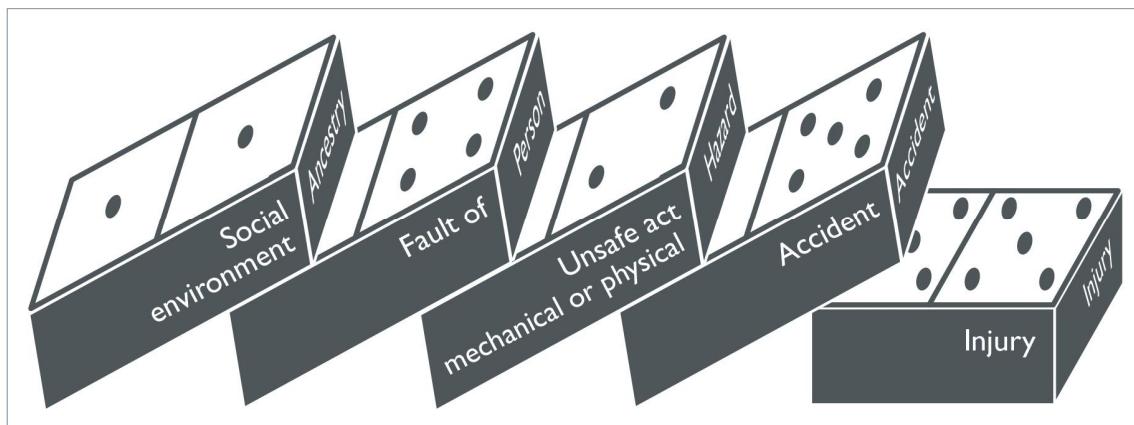


Figure 2: Domino model of accident causation (modified from Heinrich, 1931)

Based on the domino model, accidents could be prevented by removing one of the factors and so interrupting the knockdown effect. Heinrich proposed that unsafe acts and mechanical hazards constituted the central factor in the accident sequence and that removal of this central factor made the preceding factors ineffective. He focused on the human factor, which he termed öMan Failureö, as the cause of most accidents. Giving credence to this proposal, actuarial analysis of 75,000 insurance claims attributed some 88% of preventable accidents to unsafe acts of persons and 10% to unsafe mechanical or physical conditions, with the last 2% being acknowledged as being unpreventable giving rise to Heinrich's chart of direct and proximate causes (Heinrich, 1931, p.19). (Figure 3)

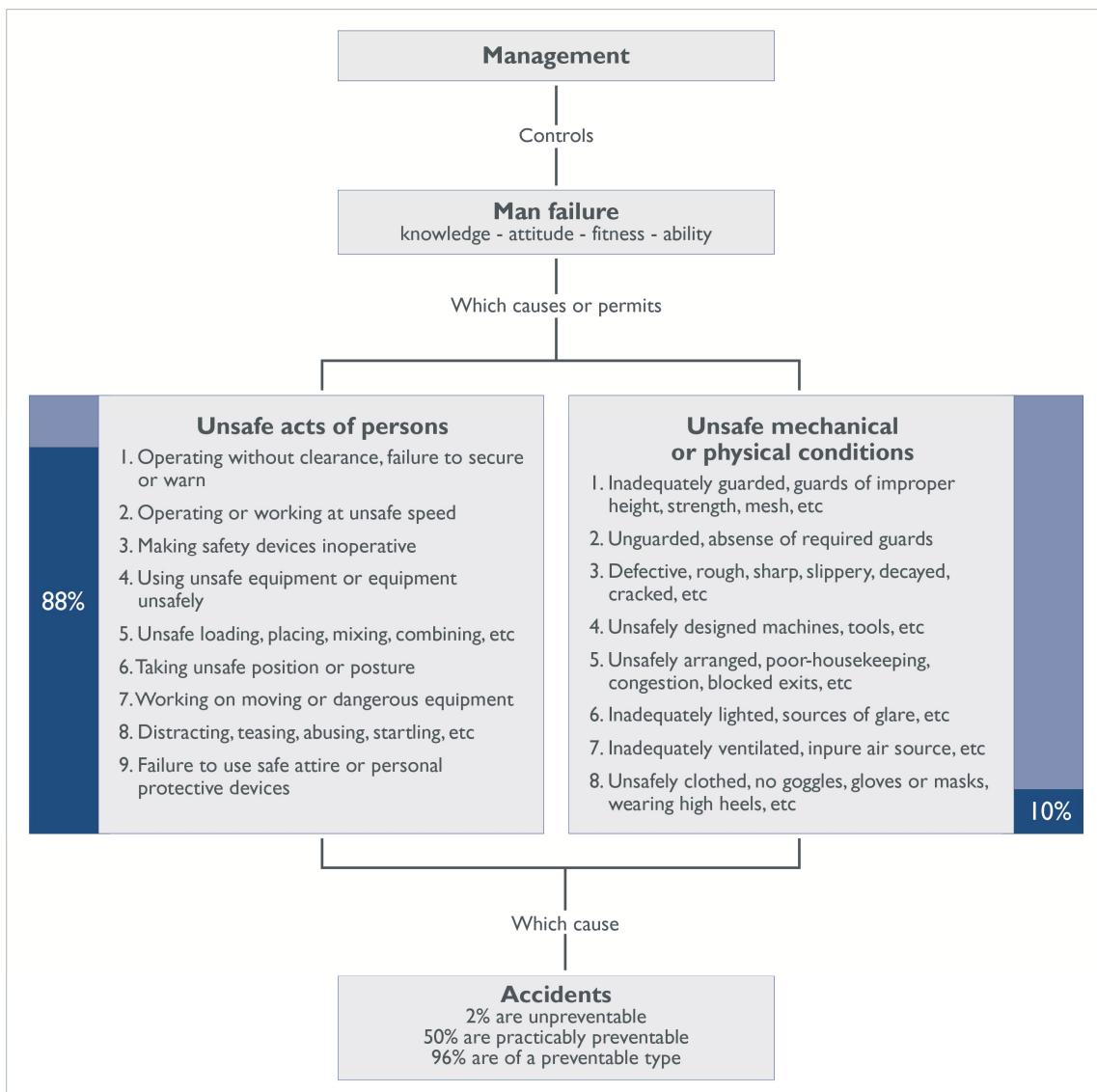


Figure 3: Direct and proximate accident causes according to Heinrich (1931)

3.1.2 Bird and Germain's Loss Causation model

The sequential domino representation was continued by Bird and Germain (1985) who acknowledged that the Heinrich's domino sequence had underpinned safety thinking for over 30 years. They recognised the need for management to **prevent and control accidents** in what were fast becoming highly complex situations due to the advances in technology. They developed an **updated domino model** which they considered reflected the direct management relationship with the causes and effects of accident loss and incorporated arrows to show the multi-linear interactions of the cause and effect sequence. This model became known as the **Loss Causation Model** and was again represented by a line of five dominos, linked to each other in a linear sequence (Figure 4).

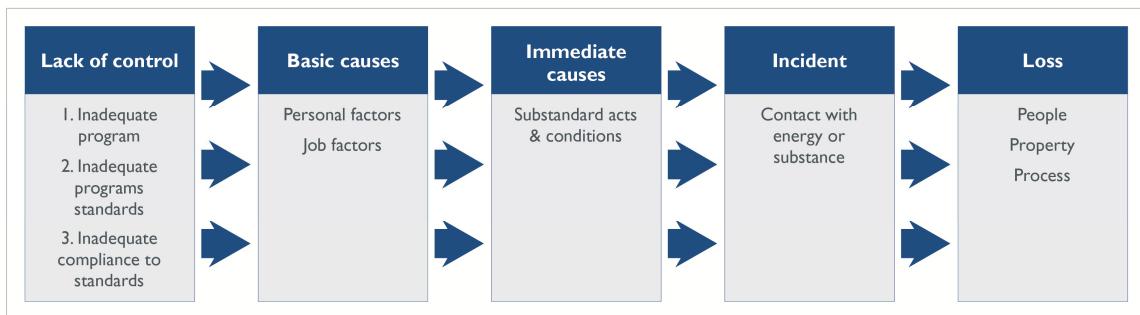


Figure 4: The International Loss Control Institute Loss Causation Model (modified from Bird and Germaine, 1985)

3.2 Complex linear models

Sequential models were attractive as they encouraged thinking around causal series. They focus on the view that accidents happen in a linear way where A leads to B which leads to C and examine the chain of events between multiple causal factors displayed in a sequence usually from left to right. Accident prevention methods developed from these sequential models focus on finding the root causes and eliminating them, or putting in place barriers to encapsulate the causes. Sequential accident models were still being developed in the 1970s but had begun to incorporate multiple events in the sequential path. Key models developed in this evolutionary period include energy damage models, time sequence models, epidemiological models and systemic models.

3.2.1 Energy-damage models

The initial statement of the concept of energy damage in the literature is often attributed to Gibson (1961) but Viner (1991, p.36) understands it to be a result of discussions between Gibson, Haddon and others. The energy damage model (figure 5) is based on the supposition that damage (injury) is a result of an incident energy whose intensity at the point of contact with the recipient exceeds the damage threshold of the recipient (Viner, 1991, p42).

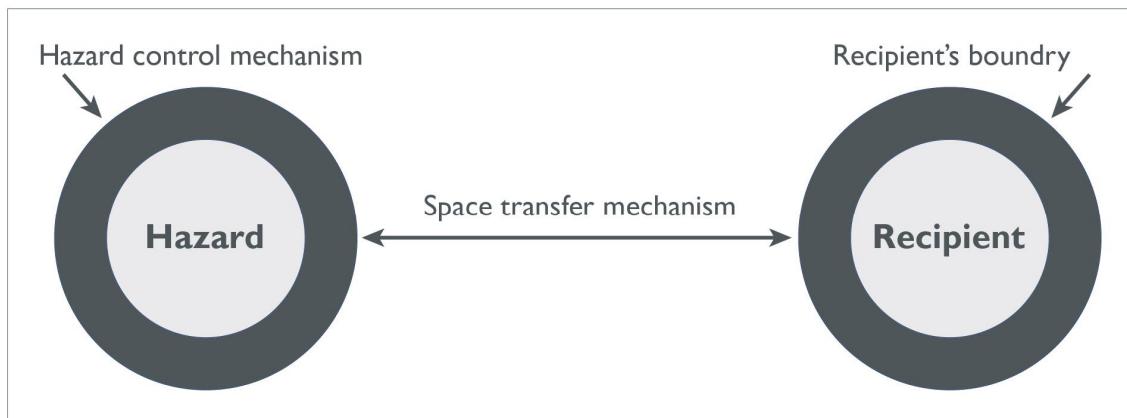


Figure 5: The Energy Damage Model (Viner, 1991, p.43)

In the Energy Damage Model the *hazard* is a source of potentially damaging energy and an accident, injury or damage may result from the loss of control of the energy when there is a failure of the *hazard control mechanism*. These mechanisms may include physical or structural containment, barriers, processes and procedures. The *space transfer mechanism* is the means by which the energy and the recipient are brought together assuming that they are initially remote from each other. The *recipient boundary* is the surface that is exposed and susceptible to the energy. (Viner, 1991)

3.2.2 Time sequence models

Benner (1975) identified four issues which were not addressed in the basic domino type model: (1) the need to define a beginning and end to an accident; (2) the need to represent the events that happened on a sequential time line; (3) the need for a structured method for discovering the relevant factors involved; and (4) the need to use a charting method to define events and conditions. Viner's Generalised Time Sequence Model is an example of a time sequence model that addresses Benner's four requirements. (Figure 6)

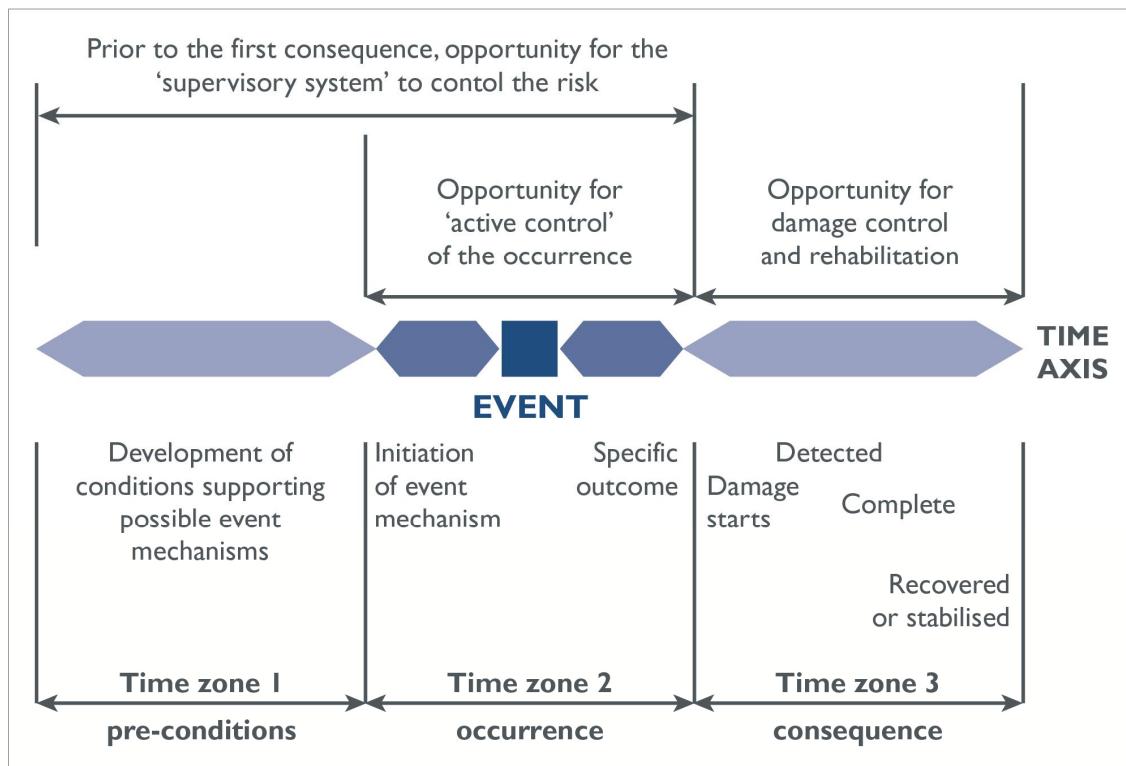


Figure 6: Generalised Time Sequence Model (Viner, 1991, p.58)

Viner considers that the structure for analysing the events in the occurrence-consequence sequence provided by the time sequence model draws attention to counter measures that may not otherwise be evident. In Time Zone 1 there is the **opportunity to prevent the event occurring**. Where there is some time between the event initiation and the event, Time Zone 2 offers a **warning of the impending existence** of an event mechanism and the opportunity to take steps to reduce the likelihood of the event while in Time Zone 3 there is an opportunity to **influence the outcome** and the exposed groups. (Viner, 1991)

While Viner takes a strictly linear approach to the time sequence Svenson (1991; 2001) takes a more complex approach in his Accident Evolution and Barrier Function (AEB) model. The AEB model analyses the evolution of an accident as a series of interactions between human and technical systems and is visualised as a flow chart. Svenson considers that the required analysis can only be performed with the simultaneous interaction of human factors and technical experts. (Svenson, 2001)

3.2.3 Epidemiological models

Epidemiological accident models can be traced back to the study of disease epidemics and the search for causal factors around their development. Gordon (1949) recognised that injuries, as distinguished from disease, are equally susceptible to this approach, meaning

that our understanding of accidents would benefit by recognising that accidents are caused by:

a combination of forces from at least three sources, which are the host ó and man is the host of principal interest ó the agent itself, and the environment in which host and agent find themselves (p. 506)

Recognising that doctors had begun to focus on trauma or epidemiological approaches, engineers on systems, and human factors practitioners on psychology Benner (1975); considered these as only partial treatments of entire events rather than his proposed entire sequence of events. Thus Benner contributed to the **development of epidemiological accident modelling** which moved away from identifying a few causal factors to understanding how multiple factors within a system combined. These models proposed that an accident **combined agents and environmental factors** which influence a host environment (like an epidemic) that have negative effects on the organism (a.k.a. organisation). See for example Figure 7.

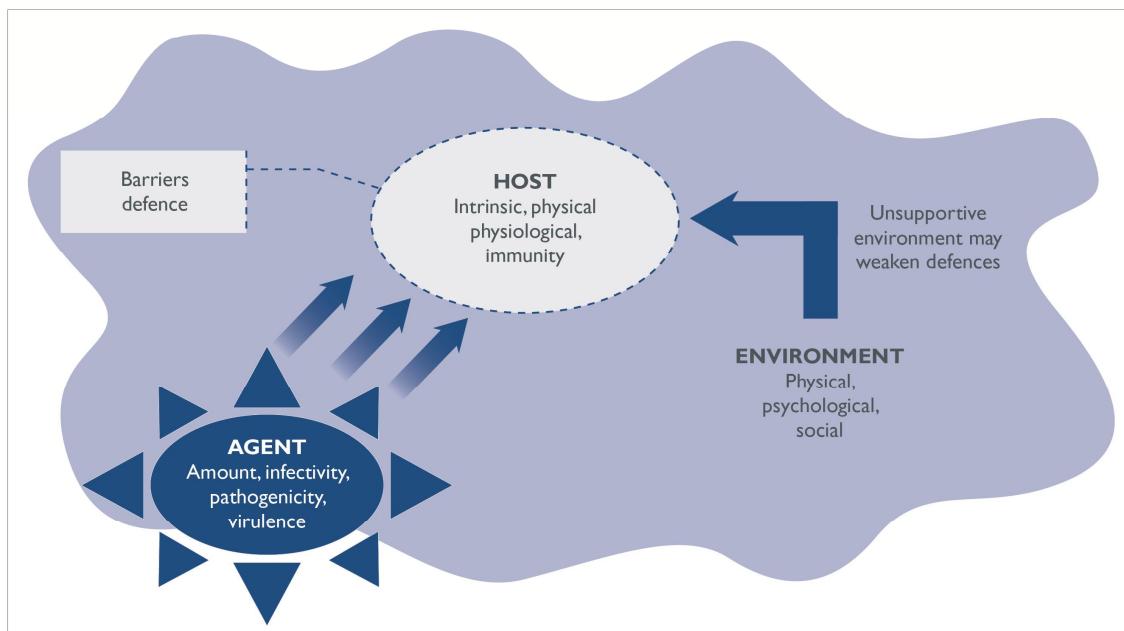


Figure 7: A generic epidemiological model (modified from Hollnagel, 2004, p.57)

Reason (1987) adopted the epidemiological metaphor in presenting the idea of **resident pathogens** when emphasising:

the significance of causal factors present in the system before an accident sequence actually begins ó and all man-made systems contain potentially destructive agencies, like the pathogens within the human body (1987, p.197).

The term became more widely known as ‘latent errors’ then changed to ‘latent failures’ evolving further when the term ‘latent conditions’ became preferred (Reason, 1997).

Accident prevention methods matching an epidemiological accident model focus on performance deviations and understanding the latent causes of the accident. These causes might be found in deviations or unsafe acts and their suppression or elimination can prevent the accident happening again. Errors and deviations are usually seen by OHS professionals in a negative context, and programs such as ‘safe behaviour’ methodologies attempt to ensure that strict rules and procedures are always followed. However safety prevention thinking is moving to an understanding that systems should be resilient enough to withstand deviations or uncommon actions without negative results.

3.2.4 Systemic models

By the 1980s OHS researchers realised that previous accident models did not reflect any realism as to the true nature of the observed accident phenomenon. As noted by Benner:

one element of realism was non-linearity – models had to accommodate non-linear events. Based on these observations, a realistic accident model must reflect both a sequential and concurrent non-linear course of events, and reflect events interactions over time (1984, p. 177).

This was supported by Rasmussen (1990) who, whilst quoting Reason’s (1990) resident pathogens, acknowledged that the identification of events and causal factors in an accident are not isolated but depend on the context of human needs and experience in which they occur and by definition ... therefore will be circular (p. 451).

Systemic accident models which examined the idea that systems failures, rather than just human failure, were a major contributor to accidents (Hollnagel, 2004) began to address some of these issues (but not non-linear concepts) and recognised that events do not happen in isolation of the systemic environment in which they occur.

Accident models also developed with further understanding of the role of humans, and in particular the contribution of human error, to safety research. A skill-rule-knowledge model of human error was developed in the earlier work of Rasmussen & Jensen (1974) and has remained a foundation concept for understanding of how human error can be described and analysed in accident investigation. Research by Rouse (1981) contributed to the understanding of human memory coding, storage and retrieval. Cognitive science came to the fore in accident research, and further work by Rasmussen (1981; 1986) and Reason (1979; 1984a; 1984b; 1984c) saw the widespread acceptance and recognition of the skill-based, rule-based and knowledge-based distinctions of human error in operations.

Rasmussen (1990) wrote extensively on the problem of causality in the analysis of accidents introducing concepts gleaned from philosophy on the linkage between direct

cause-effect, time line and accident modelling. Rasmussen explored the struggle to decompose real world events and objects, and explain them in a causal path found upstream from the actual accident where latent effects lie dormant from earlier events or acts. At this stage, Rasmussen recognised that socio-technical systems³ were both complex and unstable. Any attempt to discuss a flow of events does not take into account:

closed loops of interaction among events and conditions at a higher level of individual and organizational adaption — with the causal tree found by an accident analysis is only a record of one past case, not a model of the involved relational structure— (1990, p. 454).

In calling for a new approach to the analysis of causal connections found in accident reports Rasmussen heralded in a more complex approach to graphically displaying accidents and understanding and capturing the temporal, complex system and events surrounding accident causation.

Reason's early work in the field of psychological error mechanisms (Reason 1975; 1976; 1979) was important in this discussion on complexity of accident causation. By analysing everyday slips and lapses he developed models of human error mechanisms (Rasmussen 1982). Reason (1990) went on to address the issue of two kinds of errors: active errors and latent errors. Active errors were those —where the effect is felt almost immediately— and latent errors —tended to lie dormant in the system largely undetected until they combined with other factors to breach system defences— (p. 173). Reason, unlike Heinrich (1931) and Bird and Germain (1985) before him, accepted that accidents were not solely due to individual operator error (active errors) but lay in the wider systemic organisational factors (latent conditions) in the upper levels of the organisation. Reason's model is commonly known as the Swiss Cheese Model (see Figure 6).

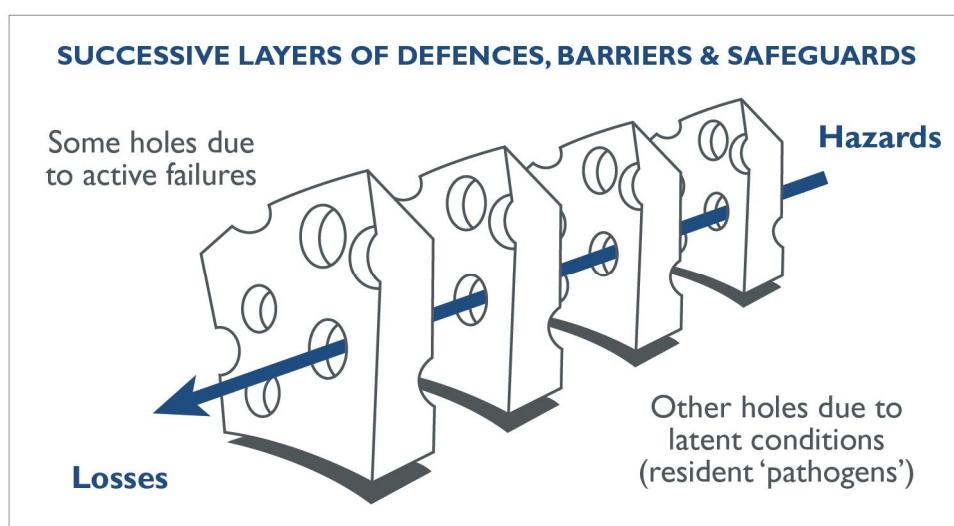


Figure 6: Reason's 'Swiss Cheese' Model (modified from Reason, 2008 p.102)

³ See OHS BoK Systems for a discussion on socio-technical systems.

Unlike the modelling work of Heinrich (1931) and Bird and Germain (1985), Reason did not specify what these holes represented or what the various layers of cheese represented. The model left the OHS professional to their own investigations as to what factors within the organisation these items might be.

The ‘Swiss Cheese’ model was only one component of a more comprehensive model he titled the *Reason Model of Systems Safety* (Reason 1997) (Figure 7).

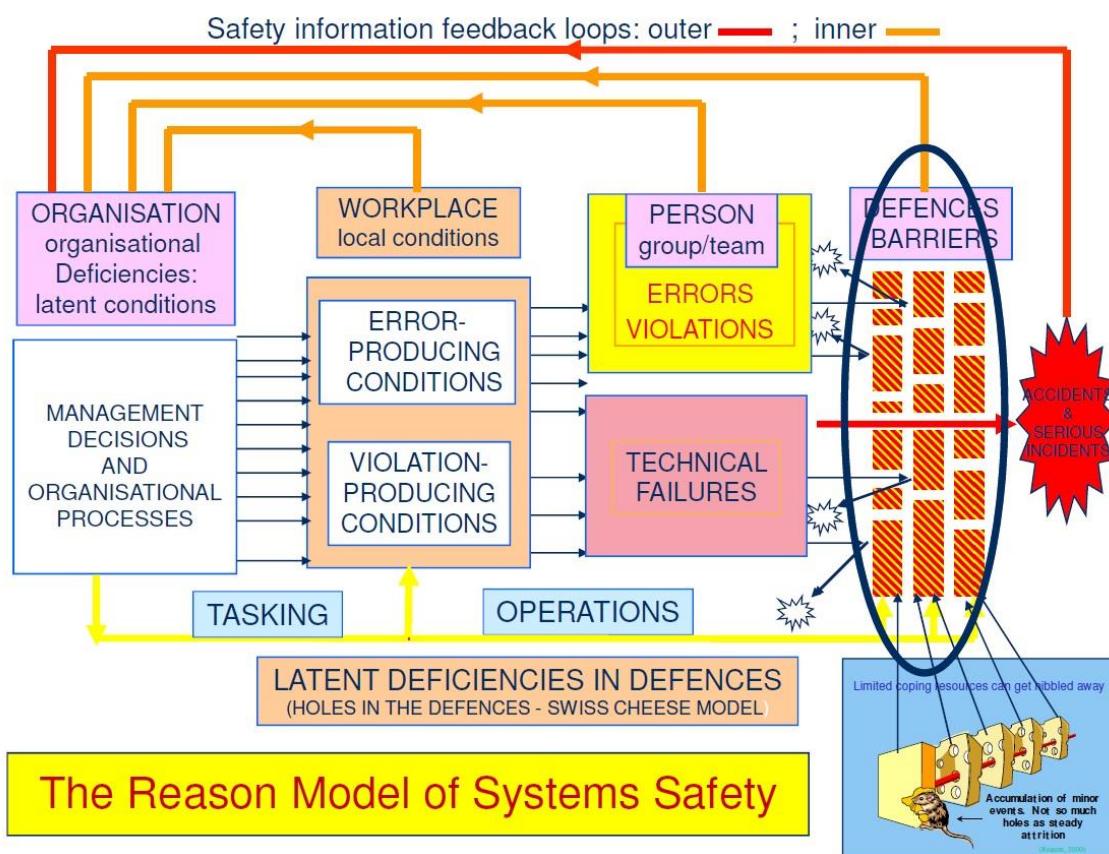


Figure 7: The Reason Model of System Safety (Reason, 1997)

Reason had a major impact on OHS thinking and accident causation in that he moved the focus of investigations from blaming the individual to a no-blame investigation approach; from a person approach to a systems approach; from active to latent errors; and he focused on hazards, defences and losses. Reason’s Swiss Cheese and Systems Safety models were an attempt to reflect these changes.

To understand the role of James Reason in changing the thinking about accidents it is important to see his work in the historical context that his work followed closely the accepted work of Rasmussen on human error (see Rasmussen, 1982) and Reason's 1987 work in this area gave him initial credibility in the safety arena. However, by 1997 he wanted accident investigation to move away from blaming the individual at the sharp end of the system towards a no-blame approach, as had been an underpinning tenet of professional air safety investigators for many years (ICAO 1970 & USNSC 1973).⁴ In focusing on hazards, defences and losses Reason (1997) wanted to convey the message that organisational accidents were a result of a failure to recognise the hazards in the system and the need to establish a variety of defences to prevent their adverse effects. The holes in the Swiss cheese represented a lack of strong, air-tight defences which ultimately let the accident sequence happen. Reason continued to discuss human error, but from an error management perspective, requiring organisations to again put in place barriers for errors rather than trying to eradicate them as he recognised total eradication as an impossible task.

These models, whilst becoming highly recognisable and favoured, were criticised for a number of reasons including their lack of definition of what the holes in the barriers represented.

[T]he Reason model, in its current form, fails to provide the detailed linkages from individual to task/environment to organization beyond a general framework of line management deficiencies and psychological precursors of unsafe acts (Luxhøj & Maurino, 2001, p. 1).

Also, the model did not allow for the variation in organisational and individual working:

Reason's model shows a static view of the organisation; whereas the defects are often transient, i.e. the holes in the Swiss cheese are continuously moving – the whole socio-technical system is more dynamic than the model suggests (Qureshi, 2007, "Epidemiological Accident Models" par.2)

While Reason's models achieved a change in thinking about accidents recognising the complexity of causation he was also part of the move away from the heavy human error emphasis (Reason, 1990) towards a no blame or "just culture" approach (Reason, 1997). The "just culture" approach recognised that human error **was not only a normal operating mode but a normal occurrence allowing humans to learn as part of their natural path of development and function.** Woods, Johannesen, Cook & Sarter (1994) describe this scenario as "latent failures [that] refer to problems in a system that produce a negative effect but whose consequences are not revealed or activated until some other enabling condition is met" (p. 19). By recognising that latent conditions require a trigger in the form of an interaction, usually with a human, it can be seen that the study of humans in the accident trajectory moves away from what the human did wrong to the study of normal

⁴ While this has now largely been accepted across industry, the recent emergence of the criminalisation of aircraft accidents has the real potential to undermine the effort and adversely impact the successful investigation of future accidents (Michaelidis and Mateou, 2010; Trogeler, 2010; Gates and Partners, 2011).

human behaviour and decision making based on the environment in which they are functioning and the knowledge and technology available for decision making at the time. The study of humans in the system moves from the individual to groups of individuals embedded in a larger system (Woods et al 1994). This is represented in Woods et al., depiction of the sharp and blunt end of large, complex systems (Figure 8.)

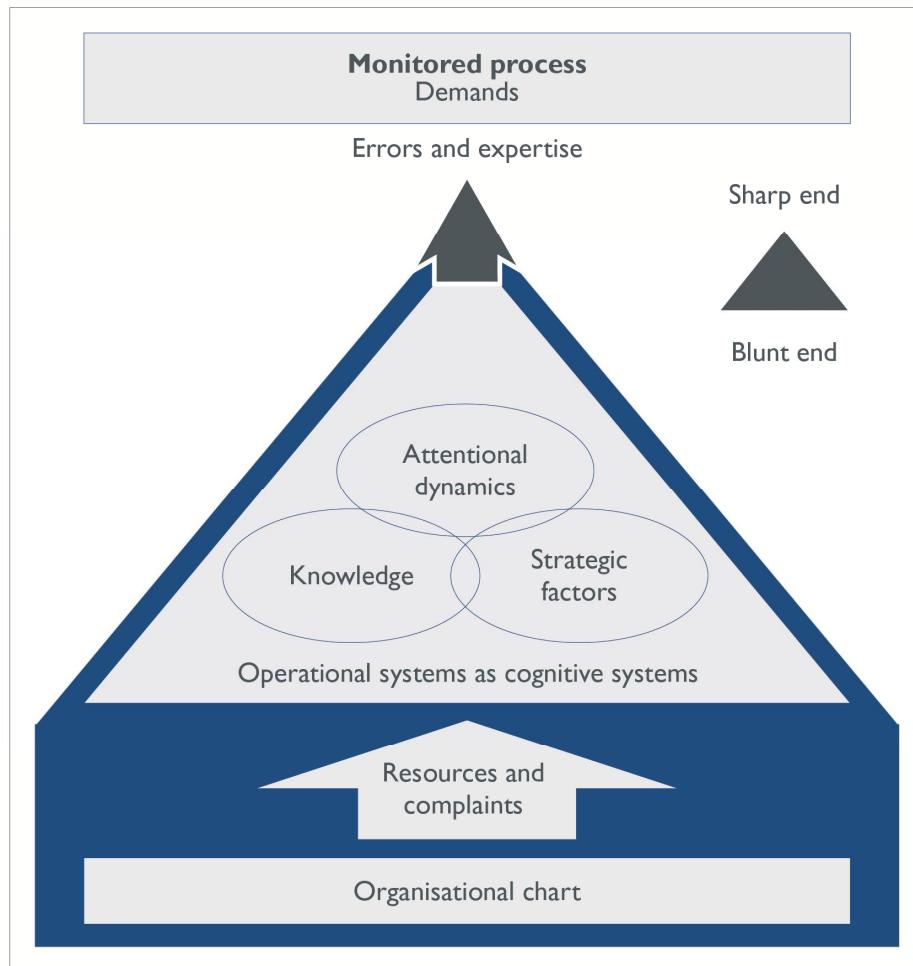


Figure 8: The sharp and blunt ends of a large complex system (Woods et al., 1994)

In 1984 Purswell and Rumar reviewed the progress of accident research in recent decades and in particular accident modelling. They noted the continuing discussion around the suitability of one accident model over another with the resolution that at this time ño universally accepted approach which is unique to occupational accident researchö had yet emerged. They cautioned against the apparent dangers of trying to obtain uniformity in the methodology of accident investigation with the dilemma being ñthe prospect of the model driving the problem definition, rather than the problem generating the appropriate model to be usedö (p. 224). This observation and concern was still appropriate a decade later.

3.3 Complex non linear accident models

As shown in Figure 1 there has been considerable overlap in the development of the various conceptual approaches to accident causation. In parallel with the development of thinking around epidemiological models and systemic models the thinking around the complexity of accident causation led to non complex linear models. Key researchers in this approach have been Perrow, Leveson and Hollnagel. The implications of recent discussions on complexity and *drift* are briefly considered.

In the early 1980s Perrow began to argue that technological advances had made systems not only tightly coupled but inheritably complex, so much so that he termed accidents in these systems as being *normal*. Perrow's normal accident theory postulated that tightly coupled systems had little tolerance for even the slightest disturbance which would result in unfavourable outcomes. Thus tightly coupled systems were so inherently unsafe that operator error was unavoidable due to the way the system parts were tightly coupled. (Perrow, 1984) Components in the system were linked through multiple channels, which would affect each other unexpectedly, and with the complexity of the system meaning that it was almost impossible to understand it (Perrow, 1984; Tenner, 1996).

Two new major accident models were introduced in the early 2000s with the intention of addressing problems with linear accident models (Hovden, et al., 2009):

- The Systems-Theoretic Accident Model and Process (STAMP) (see Leveson, 2004).
- The Functional Resonance Accident Model (FRAM) (see Hollnagel, 2004)

3.3.1 Systems-Theoretic Accident Model and Process (STAMP)

Leveson's model considered systems as *interrelated components* that are kept in a state of dynamic equilibrium by feedback loops of information and control (2004, p. 250). It emphasised that safety management systems were required to continuously control tasks and impose constraints to ensure system safety. This model of accident investigation focused on **why the controls that were in place failed to detect or prevent changes that ultimately lead to an accident**. Leveson developed a classification of flaws method to assist in identifying the factors which contributed to the event, and which pointed to their place within a looped and linked system. Leveson's model expands on the barriers and defences approach to accident prevention and is tailored to proactive and leading safety performance indicators (Hovden, et al., 2009). However this model has had little uptake in the safety community and is not widely recognised as having a major impact on accident modelling or safety management generally. Roelen, Lin and Hale (2010, p.6) suggest that this may be

because Leveson's model does not connect to the current practice of safety data collection and analysis making it less favourable than event chain models such as Reason's.

3.3.2 Functional Resonance Accident Model (FRAM)

Erik Hollnagel is one of the more forward thinking researchers in the area of accident modelling and the understanding of causal factors. While Hollnagel's early published work (Cacciabue & Hollnagel 1995; Hollnagel 1993; 1998) centred on human/cognitive reliability and human/machine interface his more recent work *Barriers and Accident Prevention* (2004) challenged current thinking about accident modelling. He introduced the concept of a three dimensional way of thinking about accidents in what is now known to be highly complex and tightly coupled socio-technical systems in which people work. He describes systemic models as tightly coupled and the goals of organisations as moving from putting in place barriers and defences to focusing on systems able to monitor and control any variances, and perhaps by allowing the systems to be (human) error tolerant.

Hollnagel's Functional Resonance Accident Model (FRAM) (Figure 9), is the first attempt to **place accident modelling in a three-dimensional picture**, moving away from the linear sequential models, recognising that forces (being humans, technology, latent conditions, barriers) do not simply combine linearly thereby leading to an incident or accident (Hollnagel, 2004, p. 171).

FRAM is based on complex systemic accident theory but considers that system variances and tolerances result in an accident when the system is unable to tolerate such variances in its normal operating mode. Safety system variance is recognised as normal within most systems, and represents the necessary variable performance needed for complex systems to operate, including limitations of design, imperfections of technology, work conditions and combinations of inputs which generally allowed the system to work. **Humans and the social systems in which they work also represent variability** in the system with particular emphasis on the human having to adjust and manage demands on time and efficiency (p. 168).

Hollnagel's (2005) theory of efficiency-thoroughness trade-off (ETTO) expanded on these demands on the humans, where efficiency was often given more priority to thoroughness and vice versa. Hollnagel recognised that complex systems comprise a large number of subsystems and components with performance variability usually being absorbed within the system with little negative effect on the whole. Four main sources of variability were identified as:

- Humans
- Technology
- Latent conditions

- Barriers (p. 171).

Holnagel proposed that when variables within the system became too great for the system to absorb them; possibly through a combination of these subsystem variables of humans, technology, latent conditions and barriers; the result will be undetectable and unwanted outcomes. That is a ≠functional resonanceø results, leading to the system being unable to cope in its normal functioning mode. (Figure 9)

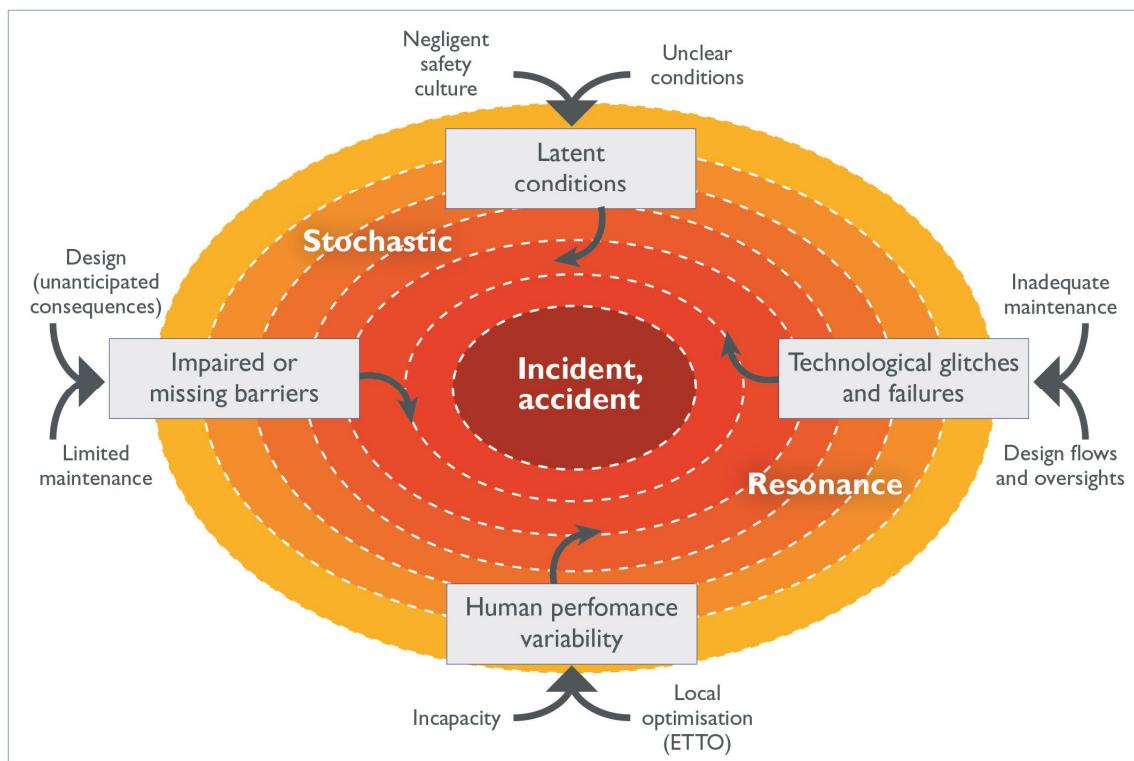


Figure 9: Functional Resonance as a System Accident Model (Holnagel, 2004)

Hollnagel's FRAM model presents a view of how different functions within an organisation were linked or coupled to other functions with the objective of understanding the variability of each of the functions, and how that variability could be both understood and managed. The functions are categorised as inputs, outputs, preconditions, resources, time and control. Variability in one function can also affect the variability of other functions (p. 173). In 2010 Hollnagel launched a web site in support of the growing cohort of researchers and OHS professionals interested in using the model as a tool for understanding and managing accidents and incidents. While the Functional Resonance Accident Model provided a theoretical basis for thinking about accident causation Hollnagel clearly differentiated between models that aided thinking about accident causation and methods of analysing accidents as part of investigations. The Functional

Resonance Analysis Method evolved from the conceptual thinking embodied in the model which was highlighted by retaining the FRAM acronym. A detailed description of the method is given in Sundstrom & Hollnagel (2011). .

3.3.3 Complexity and accident modelling

While the FRAM model begins to address complexity of organisation and the relationship with accident causation Dekker (2011) takes the discussion of complexity further to challenge the notion of accident modelling and the predictive ability of accident models. In describing complexity of society and technology Dekker considers that:

The growth of complexity in society has got ahead of our understanding of how complex systems work and fail. Our technologies have got ahead of our theories. Our theories are still fundamentally reductionist, componential and linear. Our technologies, however are increasingly complex emergent and non-linear. Or they get released into environments that make them complex, emergent and non-linear. (2011, p.169)

Accidents occur in these complex systems by a “drift into failure” which occurs through a slow but steady adaptive process where micro-level behaviours produce new patterns which become embedded and then in turn are subject to further change. Dekker’s position is that as there are no well-developed theories for understanding how such complexity develops and the general response is to apply simple, linear ideas in the expectation that they will assist in understanding causation (p.6). He considers the search for the “broken and part or person” that underpins linear models where risk is considered in terms of energy-to-be-contained, barriers and layers of defence, or cause and effect are misleading because they assume rational decision-making (p.2).

Where does this leave the OHS professional wanting to understand accident causation and seeking a conceptual framework to inform prevention and investigation activities?

4 Implications for OHS practice

In 2010, Hovden, Albrechtsen & Herrera observed that:

“technologies, knowledge, organisations, people, values, and so on are all subject to change in a changing society. Nonetheless, when it comes to occupational accident prevention most experts and practitioners still believe in the domino model and the iceberg metaphor. (p. 953)

If this is currently the case in Australia then a lack of awareness of the development of thinking about accident causation and the application of models of causation may be inhibiting the development of effective prevention strategies as:

Merely identifying a proximate cause as the “root cause” may, however, lead to the elimination of symptoms without much impact on the prospect of reducing future accidents (Marais et al., 2004; Leveson, 2004). In order to identify systemic causes, one may need to supplement with models

representing alternative mindsets in order to spark the imagination and creativity required to solve the accident risk problem. (Hovden et al., 2010, p. 954)

The Model of OHS Practice⁵ highlights the role of a conceptual framework in underpinning professional practice. An understanding of the evolution of accident, or occurrence, modelling is vital grounding for the OHS professional in developing their conceptual framework or mental model of accident causation. This chapter has considered a number of models for causation of accidents but which on initial reading may leave the OHS professional asking ‘Are models useful?’ and ‘So which model?’

Hovden et al., (2010) put this discussion into perspective for the OHS professional. While recognising that today’s organisations are dynamic socio-technical systems characterised by increased complexity, working life at the sharp end has, with some exceptions, largely remained unaltered. They argue that there is little need for new models for the sake of understanding the direct causes of accidents in daily work life but these basic models should be enriched by the theories and models developed for high-risk socio-technical systems. Thus, in developing their mental model the OHS professional should be aware of a range of models of causation and be able to critically evaluate the model for application to their practice. This evaluation should address the question of currency versus best practice. The more recent the model does not necessarily imply better practice. Section 3.3.1 noted that the STAMP model has not received broad acceptance while, in some industries, the Swiss Cheese model is still considered best practice 22 years after its introduction. The OHS professional investigating a workplace accident may be informed by discussions on complexity but may find that the energy damage model or the Swiss cheese model is more informative for the particular situation. The OHS professional must also work within the environment of the organisation and the limitations that that brings. As noted by Roelen, Lin & Hale (2011) one of the problems with the advanced models of causation including complexity factors is that they do not connect with current practices in safety data collection and analysis (p.6). In applying a particular model the OHS professional also needs to be able to differentiate between what actually occurs in the workplace with that which should happen.

The OHS professional should differentiate between the model and methods that may or may not be underpinned by theoretical models. For example sequential models inform some of traditional forms of accident analysis such as event trees, fault trees and critical path models. The Incident Cause Analysis Method (ICAM) of investigation was developed from Reason’s Swiss Cheese model. Holnagel’s Functional Resonance Analysis Method is clearly underpinned by the Functional Resonance Accident Model.

⁵ See *OHS BoK Practice: Model of OHS Practice*

5 Summary

Hovden et al., provide six uses for accident causation models:

- Create a common understanding of accident phenomena through a shared simplified representation of real-life accidents.
- Help structure and communicate risk problems.
- Give a basis for inter-subjectivity, thus preventing personal biases regarding accident causation and providing an opening for a wider range of preventive measures.
- Guide investigations regarding data collection and accident analyses.
- Help analyse interrelations between factors and conditions.
- Different accident models highlight different aspects of processes, conditions and causes. (p.955)

Accidents are complex events and that complexity has made understanding how accidents occur problematic. Beginning in the 1930s there has been an evolution in thinking about accident causation. While there has been significant overlap in the development phases, and a number of the models have enduring application in certain circumstances. The evolution has progressed from simplistic *‘domino models’* that focus on the behaviour of individuals through more complex linear models that consider the time sequence of event analysis, *‘epidemiological’* models, to systemic models that consider barriers and defences. With greater recognition of the complexity of causation of accidents newer recent models became complex and non-linear.

While recent discussions on complexity and *‘drift’* have been interpreted by some as casting doubt on the usefulness of models of accident causation, the reality of OHS professional practice is that understanding accident causation is central to effective OHS practice. The learning and understanding about accident causation engendered by an awareness of the evolution in thinking about causation and with these models leads to the establishment of effective preventive methods and systemic defences and the ability to effectively respond to those which do occur. **Failure to understand accident causation leads to degradation of preventive mechanisms and accident occurrence or recurrence.**

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Employers are encouraged to use this document to learn how they can use leading indicators to improve safety and health outcomes in the workplace. While large businesses may already be familiar with the benefits of using leading indicators, many small and medium-sized businesses may

not know what they are or how to use them. This document can help such businesses get started. This document may also be useful to large businesses seeking new approaches to using leading indicators.

SECTION 1. INTRODUCTION TO LEADING INDICATORS

1.1 What Are Leading Indicators?

For purposes of this document, leading indicators are proactive, preventive, and predictive measures that provide information about the effective performance of your safety and health activities. They measure events leading up to injuries, illnesses, and other incidents and reveal potential problems in your safety and health program. In contrast, lagging indicators measure the occurrence and frequency of events that occurred in the past, such as the number or rate of injuries, illnesses, and fatalities.

While lagging indicators can alert you to a failure in an area of your safety and health program or to the existence of a hazard, leading indicators allow you to take preventive action to address that failure or hazard before it turns into an incident. A good program uses leading indicators to drive change and lagging indicators to measure effectiveness.

For example, one good leading indicator might be the amount of time it takes to respond to a safety hazard report. A decrease in the response time may demonstrate an increased awareness in safety and managers' commitment to workplace safety. Conversely, an increase in response time could signal a lack of management concern, which could mean that hazards are likely to remain uncontrolled, and incidents are more likely to occur. Furthermore, workers may decide to discontinue reporting hazards if they feel that management is not being responsive to their concerns. This can affect morale, which could have broad implications for the workplace.

1.2 The Benefits of Using Leading Indicators

Leading indicators can play a vital role in preventing worker fatalities, injuries, and illnesses, as well as strengthening safety and health outcomes in the workplace. Employers that use leading indicators as a tool for achieving these goals have a substantial advantage over their competitors. By taking deliberate and measured actions that can prevent fatalities, injuries, and illnesses, these employers demonstrate their commitment to maintaining a socially responsible workplace that values workers. By strengthening key elements of their safety and health programs, they also can improve their overall organizational performance.

In addition to the social benefits, employers that use leading indicators to find and fix hazards can realize direct savings to their bottom line. These include savings in repair costs, production costs, workers' compensation costs, and other legal and regulatory costs that are commonly associated with incidents. For example, by fixing hazards that lead to roadblocks in production, employers may be able to complete daily tasks more efficiently and reduce production costs related to those activities.

“Today, EHS practitioners continue to rely on injury rates, absenteeism, and other lagging metrics despite the growing acceptance of the fact that these failure-focused measures are ineffective in driving continuous improvement efforts. Leading indicators, on the other hand, appear to offer a more useful gauge of EHS activity by providing early warning signs of potential failure and, thus, enabling organizations to identify and correct deficiencies before they mature into accidents and injuries.”

— *Campbell Institute, Transforming EHS Performance Measurement Through Leading Indicators*

1.3 Characteristics of Effective Leading Indicators

Good leading indicators are based on **SMART** principles, meaning they are **S**pecific, **M**easurable, **A**ccountable, **R**easonable, and **T**imely:

- **Specific:** Does your leading indicator provide specifics for the action that you will take to minimize risk from a hazard or improve a program area?
- **Measurable:** Is your leading indicator presented as a number, rate, or percentage that allows you to track and evaluate clear trends over time?

- **Accountable:** Does your leading indicator track an item that is relevant to your goal?
- **Reasonable:** Can you reasonably achieve the goal that you set for your leading indicator?
- **Timely:** Are you tracking your leading indicator regularly enough to spot meaningful trends from your data within your desired timeframe?

The chart below demonstrates how to create a SMART leading indicator to address the issue that workers have not been attending monthly safety meetings. It walks through a good and bad example for meeting each SMART criterion using the leading indicator “Number of workers who attend a monthly safety meeting.”

Example Leading indicator: Number of workers who attend a monthly safety meeting

Goal: 97% worker attendance rate at monthly safety meetings

SPECIFIC: Does your leading indicator provide specifics for the action that you will take to minimize risk from a hazard or improve a program area?

GOOD EXAMPLE

Workers will attend a safety meeting every month.

This is specific because it clearly identifies what the activity is and who needs to attend.

BAD EXAMPLE

Safety meetings will be held monthly.

This is not specific because it does not describe who needs to attend.

MEASURABLE: Is your leading indicator presented as a number, rate, or percentage that allows you to track and evaluate clear trends over time?

GOOD EXAMPLE

Workers will attend a safety meeting every month.

This is measurable because you can track the number of workers that attend every month.

BAD EXAMPLE

Workers will attend safety meetings.

This is not measurable because it does not track a number, rate, or percentage with respect to your goal.

ACCOUNTABLE: Does your leading indicator track an item that is relevant to your goal?

GOOD EXAMPLE

Workers will attend a safety meeting every month.

This indicator is relevant to your goal because it asks workers to attend the meeting.

BAD EXAMPLE

Safety meetings for workers will be held monthly.

This indicator is not relevant to your goal because it does not specify that your workers would be asked to attend.

REASONABLE: Can you reasonably achieve the goal that you set for your leading indicator?

GOOD EXAMPLE

Workers will attend a safety meeting every month. Your goal is a 97% attendance rate.

Your 97% goal is achievable because it takes into account that you will not have a make-up meeting and workers missing work will not be able to attend on the day the meeting is scheduled.

BAD EXAMPLE

Workers will attend a safety meeting every month. Your goal is a 100% attendance rate.

Your 100% goal is not achievable because you know that some workers will occasionally miss work on the day the meeting is scheduled.

TIMELY: Are you tracking your leading indicator regularly enough to spot meaningful trends from your data within your desired timeframe?

GOOD EXAMPLE

You decide to track meeting attendance monthly.

This is timely; because you track your meetings monthly, you can identify meaningful trends before the end of the year, which is when you wanted to analyze your data.

BAD EXAMPLE

You decide to track meeting attendance twice a year.

Because you only tracked two meetings, you cannot see any meaningful trends until at least the following year.

SECTION 2. USING LEADING INDICATORS

There is no “one size fits all” way to use leading indicators. Employers with newer programs may use indicators that focus on starting a program, while employers with more mature programs may use them to monitor how close they are to achieving higher performance targets. Some employers may also find it helpful to limit the number of leading indicators they start out with or how many they use at any one time. How employers assign who will track and carry out goals for leading indicators can vary based on the size of the business, who the business has on staff, whether the business has a safety manager, and the scope of job duties of the employers’ workforce.

This document will explain three approaches for developing leading indicators. The order in which they are listed does not suggest that any one approach is better. OSHA recommends using an approach that works best for you, or even a combination of two or more, that may help you to achieve a specific safety or health outcome.

- Leading indicators using data that you already collect to achieve a safety or health goal (Section 2.1).
- Leading indicators for controlling an identified hazard (Section 2.2).
- Leading indicators for improving a safety and health program element (Section 2.3).

THE STEPS FOR USING LEADING INDICATORS

PLAN

Choose a Leading Indicator

Choose the leading indicator you will use. (See Sections 2.1–2.3 for examples of approaches for developing leading indicators.)

Set a Goal

After you have decided on the leading indicator, set a goal for that indicator.

DO

Communicate

Talk with your workers about the indicator, the goal, and how you will track it. Be sure to explain why you chose that specific indicator.

Start Using Your Leading Indicators

1. Collect the data.
2. Periodically measure progress toward your goal and take action if you are not meeting it.
3. Communicate your progress with workers. For example, you may post graphs of the data in comparison to your goal over time.
If you are not meeting your goal, talk to your workers about how to get on track.

CHECK

Periodically Reassess Your Goal and Indicator

After tracking your indicator for a while, evaluate progress toward your goal and assess whether you have been meeting it. For some indicators and goals, it can take longer to see progress. You should review it regularly, and consider whether you need more time to assess its effectiveness.

ACT

Respond to What You Learn

Respond to what you learn from the results of your leading indicator, share the information with relevant personnel in your organization and, when necessary, change your leading indicator based on what you learn.



2.1 Leading Indicators Based on Data You Are Already Collecting

If you are just getting started with leading indicators, you may find it easier to work with data that you already collect, whether it is data that can improve an element of your safety and health program or data that can help address a hazard or achieve some other safety or health outcome. The following example shows how you can turn this data into a leading indicator to help you to achieve any one of these goals.

EXAMPLE: Percentage of Workers Attending Safety Refresher Training

Step 1: Choose a Leading Indicator

Every quarter, you ensure that you have administered mandatory safety refresher training to your workers; however, in the past you noticed that some of your workers did not attend these trainings. Because you already keep track of who attends training, and you want to ensure that you provide adequate training to your workers, you decide that this might be good data to turn into a leading indicator. Therefore, you define your leading indicator as the percentage of workers that receive quarterly refresher training.

Step 2: Set a Goal

In this example, your leading indicator is the percentage of

workers that receive refresher training, and your goal is 100% of your workers completing the refresher training by the end of each quarter.

Step 3: Start Using Your Leading Indicators

1. Collect the data.

To collect the data, you may decide to review the attendance sheet that workers use to sign in before the training begins.

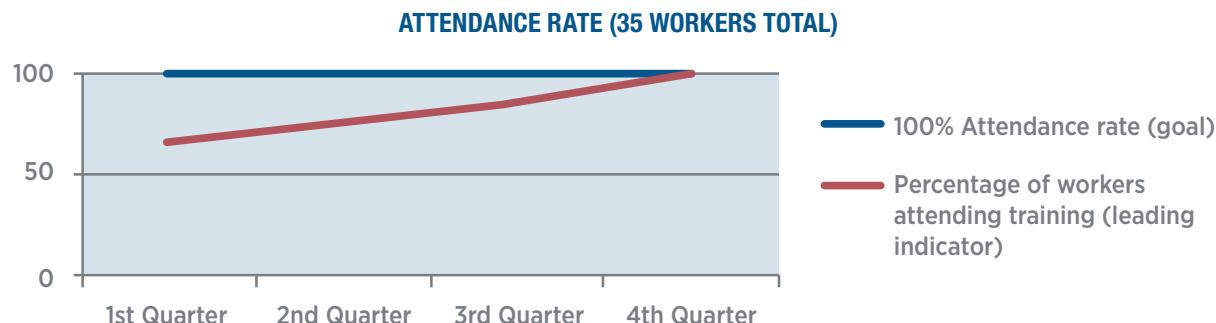
Attendance Sheet	
Ron Dufresne	
Zhihao Chan	
Kim Layton	
Martino Nunez	
Rebecca Morigny	

2. Periodically measure progress toward your goal and take action if you are not meeting it.

Count the number of workers that attended the refresher training in each quarter. If some workers did not attend the training, find out why and try to address the issue.

Step 4: Periodically Reassess Your Goal and Indicator

Check whether you are meeting your 100% attendance rate.



Below are three scenarios that could arise after you start tracking this leading indicator. Each scenario shows the kind of insights you can obtain and actions you can take once you start using your leading indicator.

- **Scenario 1:** You reviewed the attendance sheet from the last quarter. 70% of workers attended the mandatory refresher training—good, but below your goal of 100%. After discussing this with your workers, you learn that some of them did not attend because they were out from work that day. For the future sessions, you ensure that makeup sessions are scheduled and continue to track your leading indicator.
- **Scenario 2:** You reviewed the attendance sheet from the last quarter. The number of workers that attended the refresher training improved from the previous quarter, but you did not achieve your goal of 100%. After discussing this with your workers, you learn that some of them had already left work at the time the training was scheduled. You remind your workers that the training is mandatory and instruct them to notify a supervisor if they are unable to attend. You continue to track your leading indicator.
- **Scenario 3:** You reviewed the attendance sheet from the last quarter. The percentage of workers that attended the refresher training was 100%. You decide whether to continue tracking attendance every quarter after it has become routine (or consider decreasing the tracking frequency to every two quarters). Then begin to develop and track a new leading indicator for other data that you already collect.

2.2 Leading Indicators for Controlling an Identified Hazard

Leading indicators can help you improve your safety or health performance in work areas or activities where you have identified hazards. Below are some examples that walk you through the steps for using leading indicators to control the hazards that you have identified. Consider referring to the “Hazard Identification and Assessment” section of OSHA’s *Recommended Practices for Safety and Health Programs*¹ for an overview of how to identify and assess your workplace

¹ <https://www.osha.gov/Publications/OSHA3885.pdf>



hazards. In deciding which hazard to start with, consider the severity of potential outcomes if a hazard is not addressed in a timely manner, the likelihood that an event or exposure could occur, and the number of workers that could be exposed to this hazard.

EXAMPLE: Inspection and Clearing of Walkways

Step 1: Select a Leading Indicator

You operate an automotive assembly line. During your hazard identification process, you identified trips and falls that are occurring on your assembly line floor as a top incident leading to injuries. A review of your injury records showed that 22 workers were hurt from trips and falls in the past year. Due to the frequency of injuries caused by tripping hazards, you decide this might be a good hazard to start with. The number of trips and falls is a lagging indicator that you hope to drive down with a leading indicator.

After discussing it with your workers, you learned that most of the trips and falls were caused by floors cluttered with tools and equipment that workers used to assemble automotive parts, including air hoses used for pneumatic tools. You decide that a good first step to address this hazard might be to inspect and clear assembly line floors daily.

Step 2: Set a Goal

In this example, your leading indicator is the frequency of inspecting and clearing the floors, and your goal is once daily.

Step 3: Start Using Your Leading Indicators

1. Collect the data.

To collect the data, you may decide to use a checklist, marking off tasks as you complete them each day.

DAILY CLEANUP CHECKLIST

- Rewind air hoses
- Package tools and equipment away from work station floors
- Store unused car parts in storage areas away from floors
- Sweep floors of debris and other objects that can lead to slips or falls

2. Periodically measure progress toward your goal and take action if you are not meeting it.

Every week, you review your checklists to make sure you have completed all daily tasks. If you have not completed a task on any given day, find out why and try to address the issue.

Step 4: Periodically Reassess Your Goal and Indicator

Determine if you are seeing a decrease in your number of trips and falls.

Below are three scenarios that could arise after you start tracking this leading indicator. Each scenario shows the kind of insights you can obtain and actions you can take once you start using your leading indicator.

- **Scenario 1:** Workers are cleaning the assembly floors once daily, but trips and falls are still occurring. After discussing this with your workers, you find that they are completing the cleanups in the afternoon, but the floors are cluttered again by the time work starts in the morning. Based on this discussion, you change your policy to require workers to clean floors just before leaving work, and revise your leading indicator to the frequency of daily cleanups that occur at the end of the work day.

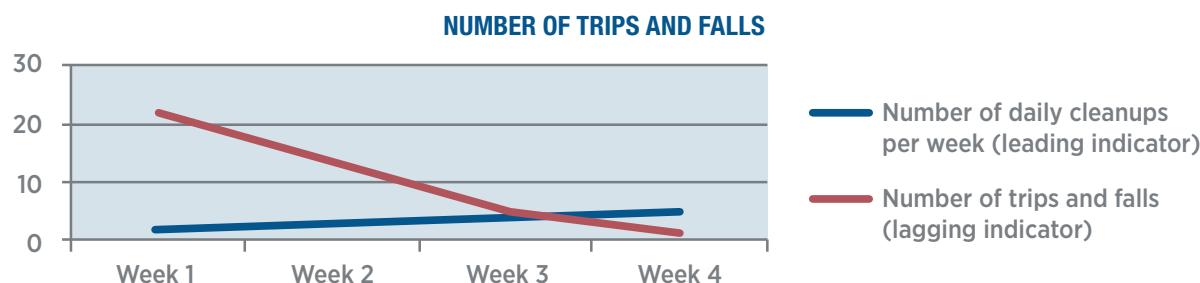
- **Scenario 2:** Workers are cleaning assembly floors once daily, and trips and falls have decreased but are still occurring. After discussing this with your workers, you learn that the daily cleanups are helping, but tools and equipment are being stored in areas that create narrow work stations and introduce new trip and fall hazards. You find other places to store tools and equipment and continue to track your leading indicator. You also invest in automatically retracting pneumatic hose reels and overhead connections to keep hoses off the floor, and consider converting to battery-operated tools to eliminate the use of hoses altogether.

- **Scenario 3:** Workers are cleaning assembly floors once daily, and trips and falls have decreased significantly. You decide whether to continue tracking the daily cleanups after they have become routine (or consider decreasing the tracking frequency from daily to weekly). Then begin to develop and track a leading indicator for a different hazard.

EXAMPLE: Truck Brake Replacement

Step 1: Select a Leading Indicator

During your hazard identification process, you review recent worker injuries caused by trucks that failed to properly stop while being operated. In discussions, your injured workers tell you that they heard squeaking brakes before the trucks failed to stop. Recognizing that squeaking brakes could result from worn brake pads, you review your inspection records and



learn that you were not replacing brake pads every 30,000 miles as recommended by the truck manufacturer. You decide that a good way to address this hazard might be to track the number of trucks that have the brake pads replaced every 30,000 miles. The number of incidents and injuries caused by trucks failing to stop is the lagging indicator that you hope to drive down with a leading indicator.

Step 2: Set a Goal

In this example, your leading indicator is the number of trucks with brake pads that are changed every 30,000 miles, and your goal is 100%.

Step 3: Start Using Your Leading Indicators

1. Collect the data.

To collect the data, you decide to submit a maintenance request to record the number of miles driven since the last time brake pads were changed. You check each truck on the first of each month, and use a sheet to check off the trucks that had brake pads changed every 30,000 miles.

TRUCK MILEAGE SINCE LAST BRAKE CHANGE

	# of miles since last brake change	Goal met?
Truck A	26,000	✓
Truck B	30,200	
Truck C	27,300	✓
Truck D	29,000	✓

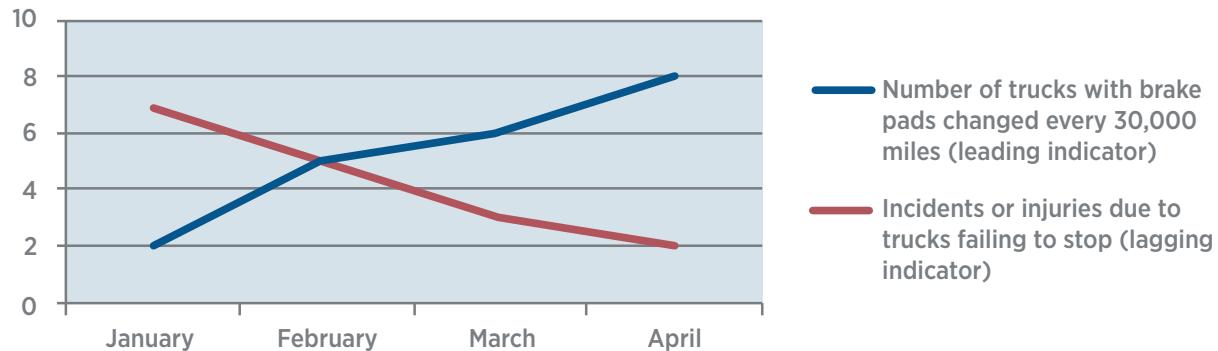
2. Periodically measure progress toward your goal and take action if you are not meeting it.

On the first of each month, you count the number of trucks that had brake pads changed at the 30,000-mile mark. If you did not change the brake pads every 30,000 miles, find out why and try to address the issue.

Step 4: Periodically Reassess Your Goal and Indicator

To assess your goal, determine if you are seeing a decrease in the frequency of worker incidents and injuries from trucks failing to stop.

NUMBER OF INCIDENTS OR INJURIES FROM TRUCKS FAILING TO STOP



Below are three scenarios that could arise after you start tracking this leading indicator. Each scenario shows the kind of insights you can obtain and actions you can take once you start using your leading indicator.

- Scenario 1:** Every month, you review the number of trucks with brake pads that were changed every 30,000 miles. While incidents and injuries have decreased, some are still occurring. After discussing this with your workers, you learn that maintenance only checks the brake pads at the beginning of the month and some trucks reached 30,000 miles two weeks before the next month's review. Based on this discussion, you begin requiring maintenance to review the miles every two

weeks instead of every month, and continue to track your leading indicator.

- Scenario 2:** Every month, you review the number of trucks with brake pads that were changed every 30,000 miles. While the number of incidents and injuries have decreased, some are still occurring. After discussing this with your workers, you learn that checking the miles on a monthly basis has helped; however, maintenance staff did not receive the keys to the trucks to prevent their use beyond 30,000 miles, because no procedure was in place that required the trucks to be taken out of service when they reached a mileage threshold. Consequently, workers continued to

use the trucks without any knowledge of this hazard, and the brakes were never replaced. You start giving your maintenance staff the keys to trucks that require maintenance as soon as you identify this issue, and continue to track your leading indicator.

- **Scenario 3:** Every month, you review the number of trucks with brakes that were changed every 30,000 miles, and incidents and injuries have decreased significantly. You decide whether to keep tracking the brake pad changes every month after it has become routine (or consider changing the tracking frequency from monthly to quarterly). Then begin to develop and track a leading indicator for a different hazard.

EXAMPLE: Arrival Time of Lift Teams

Step 1: Select a Leading Indicator

During your hazard identification process, your hospital identified manually lifting patients as a hazard. A review of your injury log showed that in the past year 15 hospital workers suffered from back injuries after manually lifting or repositioning patients. Due to the frequency of injuries from manual lifting, you decide that this might be a good hazard to start with. The number of back injuries from patient lifting is the lagging indicator that you hope to drive down with a leading indicator.

You have six two-person lift teams with lifting equipment available throughout the hospital. After discussing back injuries with your workers, you learn that it takes too long for a lift team to arrive to a patient's room after being paged. Consequently, many workers continue to manually lift patients on their own. You decide that a good way to address this hazard might be to ensure that lift teams arrive within five minutes of being paged, which is a reasonable goal given the size of your hospital.

Step 2: Set a Goal

In this example, your leading indicator is the arrival time of your lift team, and your goal is for arrival to be within five minutes.

Step 3: Start Using Your Leading Indicators

1. Collect the data.

To collect the data, you may decide to have nurses use a timer that tracks how long it takes for a lift team to arrive to a room after the team has been paged. The nurses then note the time on a daily sheet that is posted on a board in the hallway and shared by all nurses on the floor.

LIFT TEAM ARRIVAL TIMES

Monday	Tuesday	Wednesday	Thursday	Friday
5 minutes	5 minutes	5 minutes	11 minutes	9 minutes
4 minutes	5 minutes	5 minutes	5 minutes	10 minutes
12 minutes	4 minutes	7 minutes	5 minutes	5 minutes
15 minutes	8 minutes	6 minutes	5 minutes	5 minutes

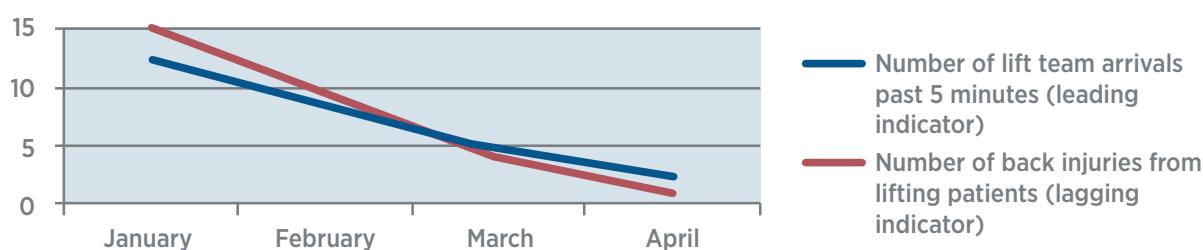
2. Periodically measure progress toward your goal and take action if you are not meeting it.

You decide to review this sheet every week. If lift teams are not arriving within five minutes, find out why and try to address the issue.

Step 4: Periodically Reassess Your Goal and Indicator

To assess your goal, determine if you are seeing a decrease in the number of back injuries among nurses and counting the number of arrivals past five minutes.

NUMBER OF BACK INJURIES FROM LIFTING PATIENTS



Below are three scenarios that could arise after you start tracking this leading indicator. Each scenario shows the kind of insights you can obtain and actions you can take once you start using your leading indicator.

- **Scenario 1:** You review the sheet every week to make sure that lift teams are arriving within five minutes. While back injuries have decreased since you last checked your progress, they are still occurring. After discussing this with your workers, you learn that although lift teams are arriving within five minutes, you need additional lift teams because there are not enough available to get to the next patient when they are paged. Based on this discussion, you review your staff levels, decide to add three more lift teams with lifting equipment, and continue to track your leading indicator.
- **Scenario 2:** You review the sheet every week, and back injuries have decreased further since the last progress update but are still occurring. After discussing this with your workers, you learn that some lift teams are not using the equipment properly, causing them to fall behind on getting to the next patient. You plan a training session so that your lift teams can learn how to correct errors in using the equipment, and continue to track your leading indicator.
- **Scenario 3:** You review the sheet every week, and back injuries have decreased significantly. You decide whether to continue tracking lift team arrival times after it has become routine (or consider changing the tracking frequency from monthly to quarterly). Then, begin to develop and track a leading indicator for a different hazard.

2.3 Leading Indicators to Improve an Element of Your Safety and Health Program

Effective safety and health programs incorporate all of the core elements outlined in OSHA's *Recommended Practices for Safety and Health Programs*:²

- Management leadership
- Worker participation

² <https://www.osha.gov/Publications/OSHA3885.pdf>
(OSHA also has a recommended practices document for the construction industry, available at <https://www.osha.gov/Publications/OSHA3886.pdf>)

- Hazard identification and assessment
- Hazard prevention and control
- Education and training
- Program evaluation and improvement
- Communication and coordination for host employers, contractors, and staffing agencies

Leading indicators can help you improve on these core elements of your safety and health program. Tying elements of a safety and health program directly to lagging indicators such as injury rates may be difficult, but experience shows that better programs do improve safety.³ This section focuses on how to use leading indicators to improve the elements of a program outlined in OSHA's *Recommended Practices*. However, they can be applied to any safety and health program regardless of what elements the program includes.

Exemplary safety and health programs use all the core elements outlined in OSHA's *Recommended Practices*. Sections 2.3.1–2.3.7 summarize the recommended practices for each core element and provide examples of leading indicators that you can use to measure your implementation of these practices. Section 2.3.8 provides examples of how to use a leading indicator you have chosen and how to measure your performance for that indicator.

2.3.1 MANAGEMENT LEADERSHIP

RECOMMENDED PRACTICES FOR MANAGEMENT LEADERSHIP

- Communicate your commitment to a safety and health program.
- Define program goals.
- Allocate resources.
- Expect performance.

³ *Benchmarking Organizational Leading Indicators for the Prevention and Management of Injuries and Illnesses: Final Report*, Institute for Work & Health, 2011, available at https://www.iwh.on.ca/sites/iwh/files/iwh/reports/iwh_report_benchmarking_organizational_leading_indicators_2011.pdf

Leading Indicators That Support Management Leadership

Below are some suggested leading indicators for measuring the implementation of recommended practices for management leadership:

- Percentage of managers and supervisors who attend mandatory safety and health training for workers.
- Number of times each month that top management initiates discussion of a safety and health topic.
- Average score on survey questions related to workers' perception of management's safety and health commitment.
- Number of worker-reported hazards or concerns for which employers initiated corrective action within 48 hours (compared to the total number of such reports).
- Average time between worker report of a hazard or concern and management acknowledgement of the report.
- Number of safety-related line items in budget and percentage of these fully funded each year.

Take Action

Take action when trends indicate that you could improve your management leadership. For example, if a busy owner or CEO skipped the safety meeting last year, note this year's meeting in their schedule ahead of time so they prioritize attendance. Similarly, if workers are reporting hazards that are not ultimately addressed due to lack of resources or competing priorities, it may be wise to determine what, if any, additional resources you can allocate to control those hazards, or manage competing priorities.

2.3.2 WORKER PARTICIPATION

RECOMMENDED PRACTICES FOR WORKER PARTICIPATION

- **Encourage workers to participate in the program.**
- **Encourage workers to report safety and health concerns.**
- **Give workers access to safety and health information.**
- **Involve workers in all aspects of the program.**
- **Remove barriers to participation.**

Leading Indicators That Support Worker Participation

Below are some suggested leading indicators for measuring the implementation of recommended practices for worker participation:

- Number of workers asked for feedback on good safety goals ahead of safety meetings.
- Number of workers involved in developing safety procedures.
- Number of workers participating in tool box talks.
- Number of workers participating in injury investigations.
- Safety perception survey participation rate.
- Number of workers involved in developing task-specific job safety analyses/job hazard analyses on how to perform routine tasks safely.
- Number of workers participating in accident investigation teams and helping to identify/implement corrective actions to eliminate hazards.

Take Action

Take action when trends indicate that you could improve worker participation. For example, if workers have not been participating in hazard prevention meetings, you should find out why. For example, some workers may feel that their managers do not value their opinions. In such instances, you could take actions to change that perception and meaningfully increase worker participation rates in safety meetings.

2.3.3 HAZARD IDENTIFICATION AND ASSESSMENT

RECOMMENDED PRACTICES FOR HAZARD IDENTIFICATION AND ASSESSMENT

- **Collect existing information about workplace hazards.**
- **Inspect the workplace for safety hazards.**
- **Identify health hazards.**
- **Conduct incident investigations.**
- **Identified hazards associated with emergency and non-routine situations.**
- **Characterize the nature of identified hazards, identify interim control measures, and prioritize the hazards for control.**

Leading Indicators that Support Hazard Identification and Assessment

Below are some suggested leading indicators for measuring the implementation of recommended practices for hazard identification and assessment:

- Frequency with which preventive equipment maintenance tasks are initiated and completed on schedule.
- Number of hours passed after an incident before an investigation is started.
- Number of hours passed after an incident before an investigation is completed.
- Percentage of incident investigations that include a root cause investigation.
- Percentage of daily/weekly/monthly inspections completed.
- Percentage of inspections that include a follow-up inspection to ensure that the hazard has been controlled.

Take Action

Take action when trends indicate that you could improve your hazard identification and assessment methods. For example, if your goal is to complete all investigations within a week of the incident, and you are finding that the average investigation has taken over two weeks, talk to your workers about the delay and develop a plan to complete them faster. Similarly, if workers only conduct root cause investigations 50% of the time, but your goal is 100% of the time, try to find out why they did not always conduct them and develop a plan that will ensure that they become a routine part of your investigations.

2.3.4 HAZARD PREVENTION AND CONTROL

RECOMMENDED PRACTICES FOR HAZARD PREVENTION AND CONTROL

- **Identify control options.**
- **Select controls.**
- **Develop and update a hazard control plan.**
- **Select controls to protect workers during nonroutine operations and emergencies.**
- **Implement selected controls in the workplace.**
- **Follow up to confirm that controls are effective.**

Leading Indicators that Support Hazard Prevention and Control

Below are some suggested leading indicators for measuring the implementation of recommended practices for hazard prevention and control:

- Length of time interim controls have been in place.
- Percentage of recommendations implemented that pertain to PPE hazard controls, administrative controls, engineering controls, substitution, and elimination.
- Number of special work permits filled out.
- Number of cartridge filters with an end of service life indicator that were returned or replaced before the indicator turned red.
- Number of hazards identified where you used leading indicators to control the hazard.
- Percentage of hazards abated on the same day, week, or month in which the hazard was identified.
- Number of workers required to wear respiratory protection.
- Number of unacceptable risks identified during risk assessments.

Take Action

Take action when trends indicate that you can improve your hazard prevention and control methods. For example, if some recommendations continue to remain open past their due date, find out why this might be the case and try to correct the issue so that you can address recommendations on time. Similarly, if you have not been using leading indicators as a tool for controlling hazards, you may want to implement a leading indicator program, and start with just one or two leading indicators during the program's first year.

2.3.5 EDUCATION AND TRAINING

RECOMMENDED PRACTICES FOR EDUCATION AND TRAINING

- **Provide program awareness training.**
- **Train employers, managers, and supervisors on their roles in the program.**
- **Train workers on their specific roles in the safety and health program.**
- **Train workers on hazard identification and controls.**

Leading Indicators that Support Education and Training

Below are some suggested leading indicators for measuring the implementation of recommended practices for education and training:

- Number of trainings provided to workers on hazard recognition and control as compared to worker attendance rates at these trainings.
- Percentage of workers receiving mandatory training on schedule.
- Percentage of incident investigations listing insufficient Number of workers trained on how to recognize and report a hazard or near miss as compared to the number of workers that report understanding the training they have received.
- Percentage of improvement on post-training assessment scores over pre-training assessment scores.

Take Action

Take action if trends indicate that you are not effectively administering training. For example, a leading indicator may reveal that you offer regular training on how to recognize and report hazards, but workers still do not clearly understand how to recognize and report certain hazards after completing the training. In this example, you may want to ask workers that have experience or knowledge of the hazard for suggestions on hands on training approaches and simulations that could be more effective.

2.3.6 PROGRAM EVALUATION AND IMPROVEMENT

RECOMMENDED PRACTICES FOR PROGRAM EVALUATION AND IMPROVEMENT

- **Monitor performance and progress.**
- **Verify that the program is implemented and is operating.**
- **Correct program shortcomings and identify opportunities to improve.**

Leading indicators That Support Program Evaluation and Improvement

Below are some suggested leading indicators for measuring the implementation of recommended practices for program evaluation and improvement:

- Number of inspections completed to identify hazards or program weaknesses.
- Number of lagging indicator rates that improved as a result of using leading indicators to take action.
- Number of goals achieved, number of goals in need of revision, or new goals that you should set for the following year.

Take Action

Take action when trends indicate that you could improve an aspect of your program. For example, if you only conduct an audit once a year, this may not be enough to track how well your program is doing over time. Similarly, if you have not achieved an important goal, it may make more sense to continue working on that goal before pursuing a new one.

2.3.7 COMMUNICATION AND COORDINATION

RECOMMENDED PRACTICES FOR COMMUNICATION AND COORDINATION

- **Establish effective communication.**
- **Establish effective coordination.**

Leading Indicators That Support Communication and Coordination

Below are some suggested leading indicators for measuring implementation of recommended practices for communication and coordination among host employers, contractors, and staffing agencies:

- Frequency of discussions between the staffing agency/contractor and the host employer that address efforts to ensure workers have a safe and healthy work environment at the host site.
- Frequency of discussions about worker safety between contract workers and host site supervisors.
- Frequency of contract employer visits to the host employer site to conduct inspections and collect safety and health information before workers are sent to the work site.
- Number of workers trained on how to avoid exposure to potential hazards before the worker begins work at the host site, including identifying whom to contact to report a hazard on site.

- Number of hazards reported by contract/temporary workers versus total site workers.
- Number of audits conducted to ensure contractors are following site safety and health policies to include in their own safety policies.

Take Action

Take action if a trend indicates that you could improve communication and coordination activities. For example, you might find that contract workers and host employers are not having frequent discussions about worker safety because the contract workers are not comfortable discussing their concerns with the host site supervisor. In this example, you might plan a meeting between your workers and the supervisor to discuss what actions the supervisor can take to help the workers feel more comfortable about having these discussions.

2.3.8 EXAMPLES: USING LEADING INDICATORS TO IMPROVE A SAFETY AND HEALTH PROGRAM ELEMENT

Sections 2.3.1–2.3.7 provided examples of leading indicators that you can use to measure the implementation of a recommended practice for each of the core elements of a safety and health program. This section provides examples of how to use a leading indicator that you have chosen from that section, and how to measure progress on your performance goal for that indicator.

Tracking Monthly Safety and Health Updates for Workers to Improve Management Leadership

Step 1: Select a Leading Indicator

While evaluating your safety and health program, you decide to review your management leadership practices and identify areas for improvement. In a survey, you ask workers whether management communicates its commitment to the health and safety program, and only 50% of workers agree or answer “yes.” Because you have a written policy for workplace safety and health, it seems that workers may not believe that your management team takes it seriously. You decide to focus on demonstrating management commitment to the program. You set a goal to have a manager attend all monthly safety meetings

and give an update on safety and health performance. The update could include status of your safety and health leading indicators and a discussion of any new safety and health issues.

Step 2: Set a Goal

In this example, your leading indicator is the percentage of monthly safety meetings in which a manager attends and gives a safety and health update. You hope to strengthen the management leadership element of your program. Using results from the next survey, you intend to measure your success by looking for a higher percentage of workers who agree that management communicates its commitment to safety and health.

Step 3: Start Using Your Leading Indicators

1. Collect the data.

To collect the data, you may decide to keep a sheet that notes whether a manager attended a monthly meeting, including a section on what safety and health updates the manager provided.

MANAGER SAFETY MEETINGS ATTENDANCE AND DISCUSSION

JANUARY

Discussion points:

FEBRUARY

Discussion points:

MARCH

Discussion points:

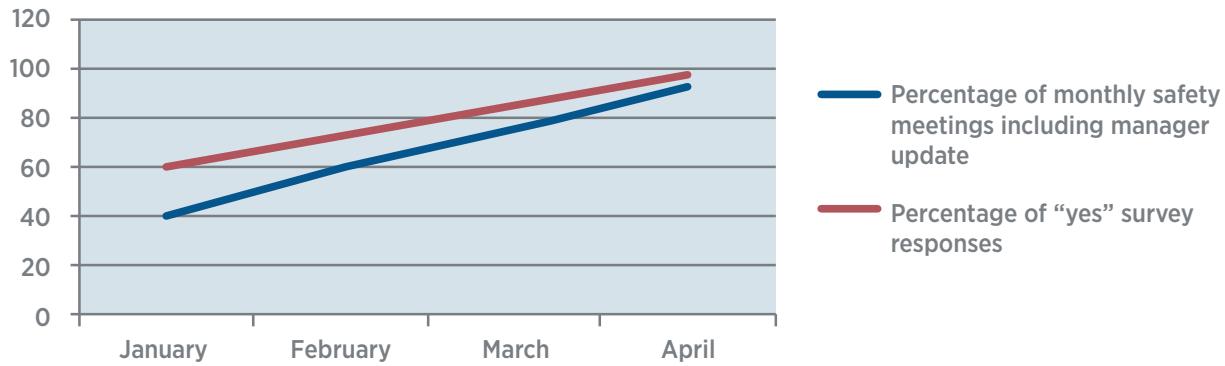
2. Periodically measure progress toward your goal and take action if you are not meeting it.

You decide to review your sheet every few months. If the manager did not attend and adequately discuss safety and health progress and performance, find out why and try to address the issue.

Step 4: Periodically Reassess Your Goal and Indicator

To assess progress toward your goal, determine if you see an increase in the percentage of “yes” responses to your survey. Since it can be difficult to change worker perceptions

MANAGER SAFETY MEETINGS AND SURVEY RESPONSES



of management commitment to safety in a short time, it may take longer to determine whether your indicator is effective in achieving this goal. You should review the results regularly, but consider whether you need more time to assess effectiveness.

Below are three scenarios that could arise after you start tracking this leading indicator. Each scenario shows the kind of insights you can obtain and actions you can take once you start using your leading indicator.

- **Scenario 1:** The manager attends the meetings and provides safety and health updates to all your workers monthly, but the percentage of "yes" responses to your survey has not significantly improved. After discussing this with your workers, you learn that some would like a more detailed explanation about why you are using certain leading indicators. You add this to your discussion points and continue to track your leading indicator.
- **Scenario 2:** The manager attends the meetings and provides safety and health updates to all your workers monthly, but the percentage of "yes" responses to your survey has only marginally improved. After discussing this with your workers, you learn that they would prefer to receive updates more frequently. You start providing updates every two weeks instead of every month, and you continue to track your leading indicator.
- **Scenario 3:** The manager attends the meetings and provides safety and health updates to all your workers monthly, and the number of "yes" responses to your survey improves dramatically. You continue the monthly updates but develop and track a leading indicator for another management leadership practice, or begin working on a different element of your safety and health program.

Tracking Completion of Action Items from Inspections to Improve Hazard Prevention and Control

Step 1: Select a Leading Indicator

While evaluating your safety and health program, you decide to review your program evaluation and improvement practices and identify areas for improvement. You decide to track the number of past-due action items since your last inspection. You set a goal not to exceed 10% on past-due action items before completing your next review.

Step 2: Set a Goal

In this example, your leading indicator is the percentage of past-due action items, and you set a goal of no more than 10%.

Step 3: Start Using Your Leading Indicators

1. Collect the data.

You collect the open action items and calculate the percentage past due.

ACTION ITEMS COMPLETED SINCE LAST INSPECTION

Action Item	Due Date	Status
Repair electrical hazard at main entrance	March 15	Completed by due date
Install new fire protection equipment in work spaces	March 15	Not completed by due date
Provide training on updated emergency procedures	April 15	Completed by due date
Conduct a root cause analysis of recent fire incident	May 15	Not completed by due date

2. Periodically measure progress toward your goal and take action if you are not meeting it.

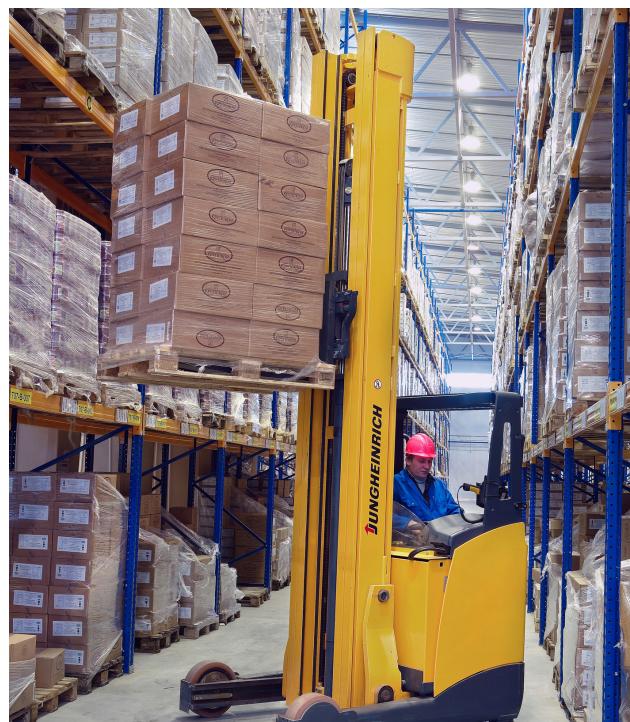
Each quarter of the year, you calculate your percentage of past-due action items. If you did not complete at least 90% of your action items, find out why and try to address the issue.

Step 4: Periodically Reassess Your Goal and Indicator

To assess your goal, determine what percentage of outstanding action items you have not completed. Is it no more than 10%?

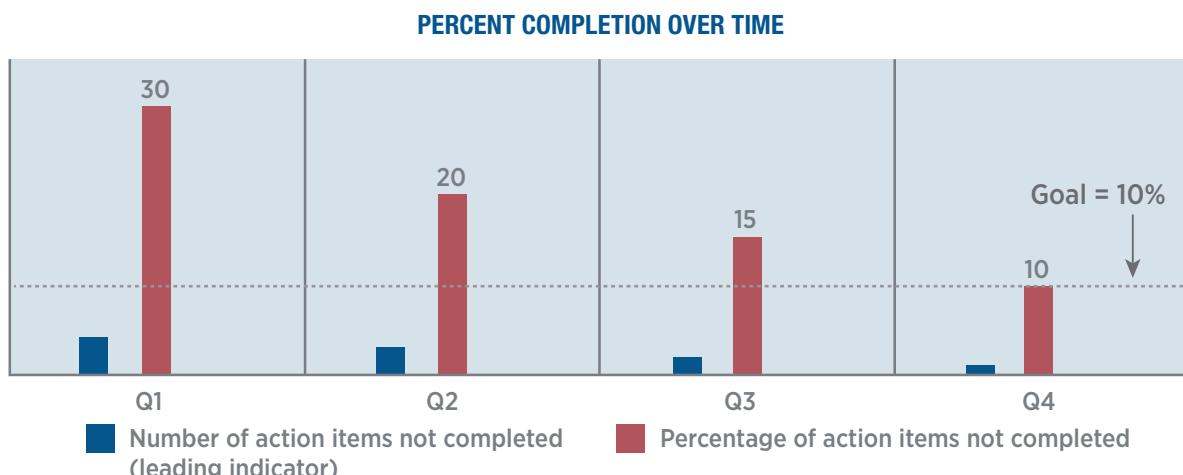
Below are three scenarios that could arise after you start tracking this leading indicator. Each scenario shows the kind of insight you can obtain and actions you can take once you start using your leading indicator.

- **Scenario 1:** Before completing your next review, you check your results and notice that your percentage of total action items not completed is above 10%. After discussing this with your workers, you learn that no procedure exists to ensure that you would complete your action items on time. You also learn that it may be helpful to give the action item list to a manager to ensure that workers meet the due dates. You set a meeting with your workers to come up with a procedure for completing action items on time, begin giving the list of action items to a manager at the conclusion of each inspection, and continue to track your leading indicator. You also make this tracking log available to workers so they can become more involved with ensuring timely completion dates.
- **Scenario 2:** Before completing your next review, you check your results but your percentage of total action items not completed is above 10%. After discussing



this with your workers, you learn that the equipment, parts, or tools needed to complete some of the action items were not available. You take appropriate actions to ensure the parts or tools needed to complete the action items are available, and continue tracking your leading indicator.

- **Scenario 3:** You review your results before your next review, and your percentage of total action items not completed is below 10%. You decide whether to continue tracking your leading indicator, develop and track a leading indicator for another hazard prevention and control item, or begin working on a different element of your safety and health program.



SECTION 3. CONCLUSION

Leading indicators are a valuable tool that you can use to make measurable and long-lasting improvements to safety and health outcomes in the workplace. Leading indicators can be valuable regardless of whether you

have a safety or health program, what you have included in your program, or what stage you may be at in your program. Use the checklist below to get started today.

ACTION PLAN CHECKLIST

- **Identify your top problem areas.** For hazards, review your injury logs, and results from your hazard assessments. Start with the hazard with the greatest risk of harming workers by evaluating the severity of the potential exposure and the likelihood that an incident could occur. Prioritize hazards over other areas of your program, particularly if a threat is imminent.
- **For other program elements, talk with your workers about what areas you could improve.** For data that you are already collecting, determine whether it is an area that you should prioritize.
- **Consider what actions you could take to address your key areas.** Talk with your workers and anyone else with knowledge of the issue that can provide suggestions.
- **Set a goal, and use leading indicators to reach it.** Make an informed decision on what your goal should be and how long it might take to achieve. Choose a leading indicator that can help you to achieve your goal over time.
- **Collect the data.** Begin collecting the leading indicator data for the time period you decided on as well as the data for your goal during that same time period.
- **Periodically review the results.** Assemble the results into a graph to determine whether there is a positive relationship between your leading indicator and your goal. Did the action that you took help you to achieve your goal? If not, try something else.
- **Remember that just one or two indicators can make a positive impact.** OSHA recommends getting started today and customizing the type and number of indicators to your needs, resources, and abilities as they evolve over time.

Remembering the Legal Legacy of the Triangle Shirtwaist Factory Fire 100 Years Later

<https://richardsesq.wordpress.com/2011/03/22/remembering-the-legal-legacy-of-the-triangle-shirtwaist-factory-fire-100-years-later/>

One hundred years ago on 25 March 1911, New York City suffered its most shocking and deadly industrial tragedy to befall the city when 146 young, mostly immigrant, women died as a result of a fire that broke out on the eighth floor of the Asch Building located on Washington Place and Greene Street (now the Brown Building on the New York University campus). Much has been written and documented about the Triangle Shirtwaist Factory fire and its aftermath, particularly the fire regulations that were inaugurated as a result. But fewer people know that the deadly fire occurred one day after the New York Court of Appeals had declared New York's first Workmen's Compensation law unconstitutional, so that the families of the victims of the fire received only minimal compensation for their loss, only \$75 per victim.

Known as the Wainwright-Phillips Compulsory Compensation Act (Wainwright), New York's first Workmen's Compensation law had taken effect on September 1, 1910. It was the country's first modern workmen's (now referred to using the gender-neutral term "workers") compensation statute (John Fabian Witt, "The Transformation of Work and the Law of Workplace Accidents, 1842-1910." *The Yale Law Journal*, Vol. 107, No. 5 (Mar., 1998), pp. 1467-1502). In many ways, Wainwright was revolutionary because it substantially altered the degree of responsibility that an employer had for the safety of its employee.

Prior to Wainwright, three common law defenses operated to shield employers when injured employees sued them for work-related negligence. The first defense was **assumption of the risk**: the employee had assumed the risks of the job by accepting to work for the employer. The second defense was **contributory negligence**: that the worker had not exercised due care in the performance of the job. The third employer defense, **the "fellow-servant" doctrine**, required that the injured employee first bring a cause of action against the fellow employee who caused the accident, and not against the employer. The fellow-servant rule thus shielded employers from negligence suits where an employee was injured by a fellow employee. Wainwright changed this by holding the employer equally liable with the negligent fellow employee for injuries an employee sustained on the job.

Wainwright's constitutionality was quickly questioned in Ives v. South Buffalo Railway Company, 201 N.Y. 271; 94 N.E. 431 (1911). Ives had sued the railroad under Wainwright for injuries in the course of his work for the railroad. Prior to Wainwright, Ives would have had to sue his fellow employee under the fellow-servant doctrine before bringing a suit directly against his employer given the manner in which he was injured. Employed as a switchman, Ives claimed that he was standing on a coke train and that he sprained his ankle as a result of the sudden jarring caused when the engineer took up the slack between the trains. His injuries caused him to lose several weeks of work. The railroad admitted all of the facts alleged but challenged the constitutionality of the law under which the suit was brought. The Court of Appeals agreed with the railroad and declared the Wainwright Compensation Act unconstitutional on the grounds that the law deprived the employer of property in violation of the Due Process Clause of the U.S. Constitution. That left Ives with no further legal recourse for certiorari to the U.S. Supreme Court because the state court had found in favor of the federal due process right.

But the events of the following day at the Triangle Shirtwaist Factory so shocked the city and the State that progressive reformers began to push for worker protection once again in the New York

State legislature. The result was the passage of the New York's Workmen's Compensation Act of 1914. Under the new law, workers gave up their right to sue their employers in negligence for injuries, illnesses or disabilities sustained on the job, in exchange for payment from a workers' compensation fund administered by the New York State Insurance Fund.

Today there are Workers Compensation statutes in every state, and each state has set up its own system of regulations and compensation. Federal employees are covered under the Federal Employees Compensation Act (FECA) that was passed in 1916. The Longshore and Harbor Workers' Compensation Act (LHWCA) was enacted in 1927 to protect workers injured at sea. The legal legacy of the 146 victims of the Triangle Shirtwaist Factory has been great. We owe those young women a tremendous debt of gratitude for the statutory protections we enjoy as a result of their tragic deaths one hundred years ago.