



### Hazard Profile for Demolition

Developed by Demolishers and the WorkCover Construction Industry SafeWork 2000 project.

© WorkCover NSW 1999	Use the Profile as a guide to help:
	identify hazards and the necessary controls required for each of your job tasks;
University of New South Wales	fill in safety documentation
School of Safety Science	guide, or induct, new workers in the typical hazards for your trade; and
Building Research Centre	check that all general trade specific hazards have been identified in safety documentation required by the Principal Contractor

Hazard identification tool - Demolition			
Job Activity (Tasks)	What Can Harm You (Hazards)	What Can Happen (Risks)	Causes Which Need to be Managed (Controlled)
<b>General Planning</b>	Inadequate training, planning and improvisation.	Task specific injuries due to inexperience, or failure to provide appropriate equipment.	<ul style="list-style-type: none"> <li>• Insufficient skills (competency) to complete the required task.</li> <li>• Inadequate competent supervision.</li> <li>• Planning for required equipment not carried out.</li> <li>• Improvisation using inappropriate equipment.</li> </ul>
	Poor access.	Slips, trips and falls; abrasions, strains and sprains; manual handling injuries.	<ul style="list-style-type: none"> <li>• Access to work area cluttered – poor housekeeping.</li> <li>• Area around work area cluttered with stored materials and/or rubbish.</li> <li>• Inadequate access for demolishers and their equipment.</li> </ul>
	Insufficient lighting.	Slips, trips and falls; walk into objects.	<ul style="list-style-type: none"> <li>• Poor lighting provided especially in basement areas.</li> <li>• Access ways not suitably defined or lighted.</li> </ul>
	Lack of adequate ventilation.	Illness; overcome by fumes.	<ul style="list-style-type: none"> <li>• Working in a confined space.</li> <li>• Intake for asbestos decontamination, or other chamber positioned too close to diesel or other fumes.</li> <li>• Petrol/ diesel driven equipment used.</li> </ul>
	Working at height near edge.	Fall from the edge of a floor.	<ul style="list-style-type: none"> <li>• Inadequate strength in perimeter handrail or midrail and fenderboard missing.</li> <li>• Gaps in perimeter protection, e.g. between screen or edge scaffold.</li> <li>• No catch scaffold provided.</li> </ul>

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	Penetrations.	Fall through penetration.	<ul style="list-style-type: none"> <li>• Penetrations not fenced or covered, or cover not secured forming "trap".</li> </ul>
	Uncontrolled collapse of structure or part of structure.	Serious injury to person/s.	<ul style="list-style-type: none"> <li>• Poor planning of the demolition process.</li> <li>• Planning, including method of demolition not approved by the appropriate Authority.</li> </ul>
	Noise from plant and equipment.	Hearing damage.	<ul style="list-style-type: none"> <li>• No engineering solution for high noise level, e.g. quieter or muffled equipment.</li> <li>• No temporary sound absorption screen or barrier to protect other persons in the area.</li> <li>• No PPE or incorrect PPE worn for the required task.</li> </ul>
	Sharp objects.	Cuts, lacerations, puncture wounds.	<ul style="list-style-type: none"> <li>• No PPE or incorrect PPE worn for the required task.</li> </ul>

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	Hazardous materials in structure.	Exposure to hazardous materials.	<ul style="list-style-type: none"> <li>• Hazardous substances survey not conducted prior to commencement of work.</li> <li>• Detailed removal techniques not documented.</li> <li>• Specialized workers (licensed) not involved in removal or workers not inducted.</li> <li>• Hazardous materials not reported when detected.</li> <li>• Required precautions for removal, handling and disposal not followed.</li> <li>• Demolition techniques inappropriate for containment of hazardous material – scatter material over a wide area.</li> <li>• Other workers not prevented from entering areas where hazardous materials exist or are being removed.</li> <li>• No warning signs or signs insufficient.</li> <li>• Hazardous material left on site after completion of work.</li> <li>• Bagged materials not removed before damage to bag/s occurs.</li> </ul>
	Dust and other fibres.	Inhalation, respiratory disease.	<ul style="list-style-type: none"> <li>• No PPE or incorrect PPE worn for the required task.</li> </ul>
	Exposure to Ultra Violet Light, glare.	Skin cancer; sunburn, eye damage.	<ul style="list-style-type: none"> <li>• Personal protective clothing – sunscreen 15-30+, shirt, flap on hard hat not worn.</li> <li>• AS rated sunglasses not worn.</li> </ul>

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<b>Preliminaries Disconnect and/or decommission services</b>	Electricity.	Electric shock, burns or electrocution.	<ul style="list-style-type: none"> <li>• Licensed electrical contractor not used to switch off/isolate power.</li> <li>• On site labour do not treat all power circuits as live.</li> <li>• Pyro connection (fire backup for alarm) not identified, tagged and isolated.</li> <li>• Earth Leakage Switch not installed on mains supply or portable generator.</li> <li>• Other power source from outside the site not identified and disconnected.</li> <li>• Irregular unauthorized connections not identified and disconnected.</li> <li>• Temporary connections not identified, tagged and isolated.</li> </ul>
	Gas.	Injury from explosion; severe burns from being caught in the explosion, or fire fighting a fire.	<ul style="list-style-type: none"> <li>• Licensed Gas Plumber not used to isolate and switch off gas supply at source.</li> <li>• Residual vapour in mains not flushed with compressed air.</li> <li>• Workers attempt to fight a gas fire instead of notifying emergency services.</li> <li>• Leaks in pipes caused by heavy machinery loading.</li> <li>• Irregular unauthorized connections not identified and disconnected.</li> </ul>
	Other volatile or explosive materials.	Injury from explosion; severe burns from being caught in the explosion or <del>fire</del> or fighting a fire.	<ul style="list-style-type: none"> <li>• Insufficient identification and planning.</li> <li>• Dust ignition.</li> <li>• Chemical ignition.</li> <li>• Diesel/petroleum ignition.</li> <li>• Decommissioning of old chemical, or fuel tanks.</li> </ul>

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	Fire.	Burns and/or smoke inhalation or asphyxiation.	<ul style="list-style-type: none"> <li>• Short circuit.</li> <li>• Work area not cleared of combustible material prior to oxy cutting.</li> <li>• Stray spark from oxy or other.</li> <li>• Spotter" (additional worker) not used to watch for spot fires that may be caused by sparks from oxy cutting.</li> <li>• Material combustion.</li> <li>• Fire extinguisher not maintained or adjacent to work area.</li> <li>• Workers not trained in the use of fire fighting equipment.</li> </ul>
<b>Protection of the public and site personnel</b>	Windborne dust and small particles.	Struck by dust or small particles. Eye injuries.	<ul style="list-style-type: none"> <li>• Dust not wet down.</li> <li>• No regular clean ups and removal.</li> <li>• Safety glasses not worn.</li> <li>• Poor separation and/or public protection in areas, which are still accessible to the public.</li> <li>• Perimeter scaffold not adequately screened e.g. wire mesh and fire retardant material.</li> </ul>
	Large falling debris or partial collapse.	Serious injury to persons.	<ul style="list-style-type: none"> <li>• Poor separation and/or public protection in areas that are still accessible to the public.</li> <li>• Uncontrolled collapse of large members or other material.</li> <li>• Insufficient planning for lowering or control of large materials.</li> </ul>

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	Collapse of a façade to be retained.	Serious injury to person/s.	<ul style="list-style-type: none"> <li>• Insufficient planning by engineer/s or other responsible persons.</li> <li>• Planning does not allow for adverse weather – e.g. high winds.</li> <li>• Façade foundation undermined.</li> <li>• Façade supporting structure struck by plant.</li> <li>• Poor separation and/or public protection in area that are still accessible to the public.</li> </ul>
	Scaffold collapse.	Serious injury to person/s.	<ul style="list-style-type: none"> <li>• Competent person not used for scaffold erection up to 4 metres in height.</li> <li>• Certificated Scaffolder not used to erect scaffold in excess of 4 metres in height.</li> <li>• Foundation unstable.</li> <li>• Struck by plant.</li> <li>• Scaffold not tied in at specified intervals or some/all ties have been removed.</li> <li>• Wrong type of scaffold used – not heavy duty.</li> <li>• Scaffold overloaded beyond safe working limits.</li> <li>• Different scaffold systems mixed together.</li> </ul>

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	Lifting loads by crane	Serious injury to person/s from falling material being lifted.	<ul style="list-style-type: none"> <li>• Certificated Dogger or Crane Driver not used.</li> <li>• Individual loads not inspected and cleared before lifting commences.</li> <li>• Slings not regularly inspected and tested.</li> <li>• Load not slung correctly.</li> <li>• Sling capacity overloaded.</li> <li>• Load strikes object, e.g. structure, when lifting or lowering.</li> <li>• Communication error between Dogger and Crane Driver.</li> <li>• Foundation for mobile crane unstable.</li> </ul>
<b>Hazardous materials removal</b>	Release of asbestos fibres.	Exposure to asbestos.	<ul style="list-style-type: none"> <li>• Unidentified sources within the structure</li> <li>• Contamination of area with friable asbestos.</li> <li>• Release of fibres during removal of: <ul style="list-style-type: none"> <li>• thermal acoustic materials containing asbestos on ceilings and beams etc.</li> <li>• asbestos cement building materials e.g. roof and wall sheeting.</li> <li>• pipes insulated with asbestos.</li> <li>• vinyl tiles.</li> <li>• roof membranes.</li> <li>• electrical switchboards.</li> <li>• lift brake linings.</li> <li>• mastic sealants.</li> </ul> </li> </ul>



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	Lead dust or fumes.	Exposure to lead.	<ul style="list-style-type: none"> <li>• Unidentified lead paint on site.</li> <li>• Inhalation of lead contaminated dust.</li> <li>• Inhalation of lead contaminated fumes when cutting lead painted material.</li> </ul>
	Heat generated toxic fumes.	Inhalation of fumes.	<ul style="list-style-type: none"> <li>• Inhalation of Zinc fumes when cutting galvanized material.</li> <li>• Inhalation of lead contaminated fumes when cutting lead painted material.</li> </ul>
	Mercury in switch gear.	Exposure to Mercury.	<ul style="list-style-type: none"> <li>• Unidentified sources within structure.</li> <li>• Damage to electrical switchgear during removal.</li> </ul>
	PCBs in light fittings and transformers.	Exposure to PCBs.	<ul style="list-style-type: none"> <li>• Unidentified sources within structure.</li> <li>• Damage to fluorescent lights during removal.</li> <li>• Damage to transformers during removal.</li> </ul>
	Contamination of or lack of air.	Person collapses, suffocates or is asphyxiated.	<ul style="list-style-type: none"> <li>• Intake for asbestos decontamination unit, or air supply positioned too close to diesel, or other fumes.</li> <li>• Asphyxiation in a confined space due to lack of ventilation.</li> <li>• Confined Spaces Regulation not followed.</li> </ul>
	Petrochemical products.	Exposure causing allergies or other skin irritations.	<ul style="list-style-type: none"> <li>• Allergic reaction to chemicals.</li> <li>• No PPE or incorrect PPE worn for the required task.</li> </ul>

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	Synthetic mineral fibres (SMFs).	Release of fibres – inhalation.	<ul style="list-style-type: none"> <li>• Unidentified sources within structure.</li> <li>• Work not conducted in a controlled manner when demolishing walls or ceilings.</li> <li>• Scatter of glass fibres, mineral wool particles, SMFs.</li> <li>• Fibres not securely bagged and removed before damage to bags occurs.</li> <li>• No PPE or incorrect PPE worn for the required task.</li> </ul>
Soft strip out	Sharp objects.	Puncture wounds, cuts, glass fragments in the eye/s.	<ul style="list-style-type: none"> <li>• No PPE or incorrect PPE worn for the required task.</li> <li>• Debris not cleared from work area on a regular basis.</li> <li>• Hypodermic needles left by drug users.</li> <li>• Nails protruding from timber and other materials.</li> <li>• Removal of debris containing glass or metal with sharp edges.</li> <li>• Glass breaks during removal.</li> </ul>

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Structural demolition techniques	Heavy mobile plant in operation.	Worker struck by plant.	<ul style="list-style-type: none"> <li>Working too close to plant operating area.</li> <li>Workers not aware of planned exclusion zone for operation of plant.</li> <li>"Spotter" not used to supervise plant.</li> <li>Operator error in the control of the plant.</li> <li>Risk taking - violation of instruction or rule.</li> <li>Plant not switched off during on site maintenance.</li> <li>Additional passenger riding on the plant.</li> <li>Operator not signalled (eye contact) before approaching the operating plant or work area.</li> <li>No PPE provided for the required task. (e.g. high visibility vest)</li> <li>No reversing beepers.</li> </ul>
	Plant working at height tipping debris over an open edge.	Operating plant dragged over edge.	<ul style="list-style-type: none"> <li>Work area cluttered with debris, particularly steel reinforcement and concrete.</li> <li>Debris caught on plant, e.g. in wheels or tracks.</li> <li>No bump rail for plant at point where debris is tipped over the edge.</li> <li>Safety rail of inadequate strength, and height, unable to withstand possible plant impact.</li> <li>Edge protection not replaced immediately if removed to increase access to the edge.</li> </ul>

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	Stability of operating plant.	Roll over crushing operator.	<ul style="list-style-type: none"> <li>• Inadequate foundation for operating plant.</li> <li>• Subsidence, collapse of earth or rubble below or adjacent to plant.</li> <li>• Plant operating too close to an excavation, basement or trench.</li> <li>• Plant inclined beyond safe operating limits.</li> </ul>
	Plant or equipment generated projectiles.	Person/s struck by debris flung out from plant.	<ul style="list-style-type: none"> <li>• Poor housekeeping around plant and equipment.</li> <li>• Debris spun off machinery wheels or tracks.</li> <li>• Shattered concrete or masonry breakage when using powered hammers or picks.</li> <li>• Unauthorised persons entering the work area.</li> <li>• Operator not adequately protected.</li> </ul>

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	Wall/s destabilized.	Collapse of wall or part of the wall onto person/s.	<ul style="list-style-type: none"> <li>• Site inspection and detailed Work Method Statement not carried out.</li> <li>• Engineering approval for demolition sequence not obtained.</li> <li>• Planned demolition sequence not followed.</li> <li>• Public areas, e.g. street or walkway, not closed if there is a risk of collapse.</li> <li>• Demolition not started at the top of the wall.</li> <li>• Operator untrained, lack of understanding of specific demolition sequence.</li> <li>• Stray debris falls, e.g. loose bricks.</li> <li>• Undetected changes in wall structure, e.g. ducts.</li> <li>• Not built to plan or plans incorrect.</li> </ul>
	Column/s overloaded or destabilized.	Uncontrolled collapse causing death or multiple injuries.	<ul style="list-style-type: none"> <li>• Site inspection and detailed Work Method Statement not carried out.</li> <li>• Engineering report not correct.</li> <li>• Planned demolition sequence not followed.</li> <li>• Not built to plan or plans incorrect.</li> <li>• Overloading of floors.</li> <li>• Moving plant collides with, or swinging boom, hits column.</li> <li>• Deterioration due to termites or rust.</li> <li>• Public areas, e.g. street or walkway, not closed if there is a risk of collapse</li> </ul>

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	Floor/s overloaded or destabilized.	Floor collapse causing death or multiple injuries.	<ul style="list-style-type: none"> <li>• Site inspection and detailed Work Method Statement not carried out.</li> <li>• Engineering report not correct.</li> <li>• Plant falls through floor.</li> <li>• Not built to plan or plans incorrect.</li> <li>• Changes in floor structure or part thereof during life of building e.g. old liftwell, tower crane or dumbwaiter.</li> <li>• Demolition materials stacked too high causing overload.</li> <li>• Structural engineer's report does not establish depth guidelines for the stacking of rubble.</li> <li>• Plant strays from defined operating areas.</li> <li>• Planned demolition sequence not followed.</li> <li>• Work area slab not regularly inspected for signs of movement or new cracking, especially from underneath.</li> </ul>
	Use of explosives to weaken or topple main structure.	Person/s struck by debris flung out by blast.	<ul style="list-style-type: none"> <li>• Insufficient technical skills (competency) to complete the required task.</li> <li>• Planning, including method of demolition not approved by the appropriate Authority.</li> <li>• Inadequate assessment of the structure and explosive technique to be used.</li> <li>• Inadequate early warning.</li> <li>• Inadequate blast absorption barriers.</li> <li>• Inadequate exclusion zone for workers and the public.</li> <li>• Worker/s stray into the blast area.</li> </ul>

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	Falling debris or tools.	Person struck by falling objects.	<ul style="list-style-type: none"> <li>No barrier exclusion zone or size of the zone inadequate.</li> <li>Drop zones not barricaded and/or sign posted.</li> <li>Debris tipped from higher levels fall onto plant or persons below.</li> <li>Insufficient containment.</li> <li>Unauthorized persons enter the work area.</li> <li>Tool dropped by worker.</li> <li>Perimeter of the site not adequately secured with a combination of scaffold, wire mesh, fire retardant material, or hoardings.</li> </ul>
Use of hand held tools	Operating steel tipped tools e.g. jackhammer.	Steel splinters flung out from shattered tool striking worker/s or pick punctures work boot.	<ul style="list-style-type: none"> <li>No PPE or incorrect PPE worn for the required task.</li> <li>Jackhammer pick breaks or shatters.</li> <li>Pick worn or damaged.</li> <li>Jammed jackhammer resulting in loss of control.</li> <li>Loss of control due to constrained work area.</li> <li>Operator not trained in the use of the tool.</li> <li>Operator uses foot to guide jackhammer pick.</li> </ul>
	Operating chain saw.	Saw kicks back causing blade to strike operators body.	<ul style="list-style-type: none"> <li>Equipment not adequately maintained.</li> <li>Operator not trained in the use of the tool.</li> <li>No PPE or incorrect PPE worn for the required task.</li> <li>Loss of control due to constrained work area.</li> <li>Kickback brake not working.</li> </ul>

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	Operating electric power saw or angle grinder.	Electric shock, burns or electrocution.	<ul style="list-style-type: none"> <li>• Electrical equipment faulty.</li> <li>• Extension lead faulty or damaged.</li> <li>• Lead severed by power saw blade or disk.</li> <li>• Earth Leakage Switch not installed on mains supply or portable generator.</li> </ul>
	Cutting with power saw or angle grinder.	Serious cuts from contact with saw blade or disk.	<ul style="list-style-type: none"> <li>• Saw blade or grinder disk unguarded.</li> <li>• Guard faulty.</li> <li>• Saw blade or cutting disk damaged causing tool to catch and jump.</li> <li>• Cutting disk badly worn – blade disintegrates.</li> <li>• Wrong type of blade or cutting disk used.</li> <li>• Grinder not fitted with "Dead Mans" switch.</li> </ul>
	Sparks generated when using power saw or angle grinder to cut metal.	Fire causing burns.	<ul style="list-style-type: none"> <li>• Work area not cleared of combustible material prior to cutting.</li> <li>• "Spotter" (additional worker) not used to watch for spot fires that may be caused by sparks.</li> <li>• Fire extinguisher maintained or adjacent to work area.</li> <li>• Workers not trained in the use of fire fighting equipment.</li> <li>• No PPE or incorrect PPE worn for the required task.</li> </ul>



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	Cutting steel with Oxy Acetylene torch.	Burns to the body e.g. arms and legs. Damage to eyes.	<ul style="list-style-type: none"> <li>No PPE or incorrect PPE worn for the required task.</li> <li>Hot cut piece not constrained.</li> <li>Long guns (extended nozzles) not used for constrained work areas.</li> <li>Damage to hoses or equipment.</li> <li>No flashback arrester.</li> <li>Blow back from rust and concrete.</li> </ul>
Working at height	Working at height.	Fall e.g. from the edge or through a roof or from a boom lift.	<ul style="list-style-type: none"> <li>No edge protection.</li> <li>No harness or harness not secured.</li> <li>Harness anchorage incorrect.</li> <li>Climbing out of elevated boom lift.</li> <li>Fall through brittle roof.</li> <li>Standing on a destabilized roof after fixings have been removed in advance.</li> <li>Workers not trained in the use of safety equipment for working at heights</li> <li>Work not supervised to ensure correct procedures are followed.</li> <li>Use of a machine not considered where practicable.</li> </ul>
	Erecting ladders or working platforms near live power.	Electric shock, burns or electrocution.	<ul style="list-style-type: none"> <li>Working too close to live power lines.</li> <li>Ladder contacts power lines.</li> <li>Tiger Tails not in place on power lines.</li> <li>Windy causes power lines to swing.</li> <li>Wind causes loss of control when erecting ladder.</li> </ul>

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	Working from a ladder.	Fall from ladder.	<ul style="list-style-type: none"> <li>• Ladder not tied off.</li> <li>• Load capacity of ladder exceeded.</li> <li>• Ladder failure due to physical damage or corrosion.</li> <li>• Domestic ladder used instead of commercial.</li> <li>• Ladder not positioned at correct angle.</li> </ul>
	Working from a platform.	Fall from platform.	<ul style="list-style-type: none"> <li>• Incorrect assembly or different systems mixed together.</li> <li>• Access ladders not positioned a minimum of 900 mm above the platform.</li> <li>• Scaffold incorrectly constructed.</li> <li>• Scaffold not adequately tied or braced.</li> <li>• Platform not fully decked.</li> <li>• Inadequate edge protection.</li> <li>• Struck by plant or equipment.</li> <li>• Struck by uncontrolled collapse of part of the structure or dislodged material.</li> </ul>

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