**1.Find out all assets in presence.**

The variety of assets present in the plant covers everything from production equipment to office facilities, from raw materials to inventory products. Here are some of the main factory asset classes:

1. \*\* Production equipment and machinery \*\* :

- Production line equipment

- Robots and automation systems

- Processing and manufacturing machinery

- Packaging equipment

- Quality testing equipment

- Repair and maintenance tools

2. \*\* Buildings and Infrastructure \*\* :

- Factory building

- The warehouse.

- Office area

- Staff lounge area

- Toilets and sanitation facilities

- Energy supply system (electricity, water, gas, etc.)

- Drainage and waste disposal systems

3. \*\* Transportation and Logistics Equipment \*\* :

- Forklifts and handling equipment

- Conveyor belts and conveyor systems

- Vans and vehicles

- Warehouse shelves and storage systems

4. \*\* Information Technology System \*\* :

- Computer networks and servers

- Production management software

- Enterprise Resource Planning (ERP) system

- Quality management system

- Automatic equipment control system

5. \*\* Safety and Environmental protection equipment \*\* :

- Safety guard

- Fire fighting equipment and alarm systems

- Ventilation and air conditioning systems

- Waste gas, waste water and solid waste treatment equipment

6. \*\* Office and Administrative Assets \*\* :

- Office furniture and electronic equipment

- Computers and printers

- Telephone and communication equipment

7. \*\* Inventory and raw materials \*\* :

- Semi-finished.

- Finished product.

- Raw materials and components

- Packaging Materials

- Accessories and consumables

8. \*\* Intangible Assets \*\* :

- Brands and trademarks

- Patents and intellectual property

- Trade secrets and know-how

- Training materials and operation manuals

9. \*\* Other Assets \*\* :

- Furniture and decor

- Employee uniforms and safety equipment

- Factory logo and logo

In managing and optimizing these assets, plants often employ asset management software or enterprise resource planning systems to track, maintain, and plan the use, maintenance, replacement, and upgrade of these assets. At the same time, regular asset inventory and audit is also an important step to ensure that the asset accounts are consistent and effective management.

**2.Create Attack matrix**

2.1 Attack surface and target

The attack surface refers to the attacker's starting point and starting mode; The target of attack means that the attacker hopes to have a major deviation in a certain part or link of the attacked system. We define attack surfaces and attack targets separately because they are not always the same.

2.2 MCPs 3x3 attack hypothesis matrix

In a system attack, the attack surface and attack target may be different. Such misalignment between attack surface and attack target may occur in three aspects of MCPs, which is formed by the cross attack hypothesis of consciousness space, cyberspace space, and physical space (real world), forming the 3x3 attack hypothesis matrix as shown in Figure 3.

2.3 14x14 attack hypothesis matrix of MCPs

To study the MCPs attack hypothesis matrix more specifically, it is necessary to decompose MCPs into more detailed links. We can simply decompose MCPs into 14 aspects, which are encoded as follows:

Mm: Motivation

Mv: Value

Ms: Semantics

Cd: Data and data streams

Cm: Metadata and pure data

Ca: application and service flow

Cc: compute node

Cs: Storage node

Cn: Network and network flow

Cp: Cyber physical entity

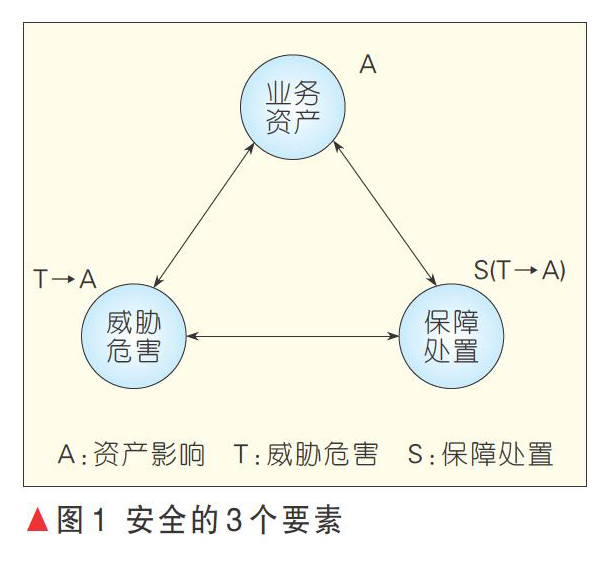
Pc: Controller

Ps: Sensor

PS: Spatial relationship

PT: Time relation

These 14 aspects of MSPs are formed into a matrix. Different rows of the matrix represent different attack surfaces, and different columns of the matrix represent different attack targets. As shown in Table 1.



**3.Create Risk matrix**

Table 1 Probability of accident (L) judgment criteria

|  |  |
| --- | --- |
| Grade | standard |
| 5 | Prevention, monitoring, protection, control measures are not taken at the site, or the occurrence of hazards cannot be detected (there is no monitoring system), or such accidents or events occur frequently under normal circumstances. |
| 4 | The occurrence of hazards is not easily detected, there is no on-site detection system, and no monitoring has occurred, or there are on-site control measures, but not effectively implemented or improper control measures, or the hazard occurs or is expected to occur |
| 3 | There are no protective measures (such as no protective devices, no personal protective equipment, etc.), or the operation procedures are not strictly followed, or the occurrence of hazards is easily detected (there is a monitoring system on site), or has been monitored, or similar accidents or events have occurred in the past. |
| 2 | Once the hazard occurs, it can be found in time and monitored regularly, or there are on-site prevention and control measures and can be effectively implemented, or there have been occasional accidents or incidents in the past. |
| 1 | Have adequate and effective prevention, control, monitoring, protection measures, or staff safety and health awareness is quite high, strict implementation of operating procedures. An accident or incident is highly unlikely. |

Table 2 Criteria for determining the severity of event consequences (S)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Lv. | Laws, regulations and other requirements | personnel | Direct economic loss | Shut down | Corporate image |
| 5 | Violate laws, regulations and standards | Death | More than 1 million yuan | Partial devices (>2 sets) or equipment | Major international influence |
| 4 | Potential violations of regulations and standards | incapacity | More than 500,000 yuan | 2 sets of equipment down, or equipment down | Influence within the industry and province |
| 3 | Does not comply with the safety policy, system, regulations of the superior company or industry | Amputations, broken bones, hearing loss, chronic diseases | More than 10,000 yuan | 1 unit shutdown or equipment | Regional influence |
| 2 | Does not comply with the safety operation procedures and regulations of the enterprise | Minor injury, intermittent discomfort | Less than 10,000 yuan | Little disruption, almost no downtime | Company and surrounding area |
| 1 | Fit perfectly | No casualties | No loss | No stoppage | Untarnished image |

Table 3 Safety risk rating criteria (R) and control measures

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| value-at-risk | Safety risk level | Corresponding to the security risk assessment levels in this standard | The level of control that should be taken | Implement control measures |
| 20-25 | Extremely dangerous | Major risk | Company (factory) level, workshop (department) level, team and position control | Immediately supplement control measures to reduce risk levels, and regularly check, measure and evaluate |
| 15-16 | High risk | Greater risk | Company (factory) level, workshop (department) level, team and position control | Immediate or recent supplementary control measures, regular inspection, measurement and evaluation |
| 9-12 | Significant risk | General risk | Workshop (department) level, team, post control | Establish objectives, establish operating procedures, strengthen training and communication |
| 1-8 | Minor hazard | Low risk | Team, post control | We will improve control measures when conditions permit and funds are available |

1. Security risks of equipment and facilities

1.1 The aging device is not maintained or updated in time, resulting in risks of failure and shutdown.

1.2. Mechanical equipment safety protection device missing or failure, may lead to injury.

3. The electrical circuit is aging, exposed or does not meet specifications, which may cause fire or electric shock accidents.

4. There may be loopholes in the automation control system, resulting in misoperation or abnormal production.

2. Potential threats to fire safety

1. The fire channel is not smooth or stacked with debris, affecting emergency evacuation and fire fighting.

2. Fire fighting equipment and facilities are insufficient, damaged or expired, and cannot effectively respond to fire.

3. Employees are weak in fire safety awareness and lack of necessary fire training and drills.

4. Inflammable and explosive materials in the factory are improperly stored, which can easily cause fire or explosion.

3. Chemical management risks

1. Chemical storage is not standardized, not classified storage, may lead to misuse or leakage.

2. The use of chemicals without professional training of staff operation, easy to cause safety accidents.

3. Improper disposal of chemical waste may cause environmental pollution.

4. The lack of chemical safety management system and emergency plan makes it difficult to effectively respond to emergencies.

4. Occupational health and health risks

1. There are occupational hazard factors such as noise, dust and harmful gases in the workplace.

2. Insufficient or non-compliant labor protective equipment, difficult to protect the health of employees.

3. The occupational health examination of employees is not in place, and the hidden occupational diseases are not found in time.

4. Lack of occupational health management system and health promotion measures, affecting the physical and mental health of employees.

5. Environmental pollution and control risks

1. Excessive discharge of waste water, waste gas, solid waste and other pollutants, polluting the environment.

2. The operation of environmental protection facilities is abnormal or missing, and it is difficult to meet environmental protection requirements.

3. Lack of environmental protection management system and monitoring means, it is difficult to effectively monitor pollution emissions.

4. Changes in environmental regulations or policy adjustments may lead to increased investment in environmental protection or risk of penalties.

6. Financial risk and capital flow

1. Poor capital flow may affect production and business activities.

2. Poor cost control leads to a decline in corporate profitability.

3. Insufficient financial risk assessment may lead to mistakes in investment decisions.

4. The lack of financial risk early warning mechanism and countermeasures makes it difficult to deal with unexpected financial events.

7. Marketing and marketing challenges

1. Market demand changes rapidly, and product replacement pressure is great.

2. Increased market competition may affect product sales and market share.

3. Improper marketing strategies may lead to brand image damage or market contraction.

4. Lack of market research and customer demand analysis, difficult to accurately locate the market.

8. Data and network security risks

1. Weak awareness of data protection may lead to data leakage or tampering.

2. The network system has security vulnerabilities and is vulnerable to hacker attacks or virus infections.

3. The lack of data security management system and emergency plan makes it difficult to effectively respond to network security incidents.

4. Improper operations or misoperations of employees may result in data loss or damage.

1. **Find in the Internet rates of attacks of the above attack matrix**

The Internet attack rate of the MCPs14x14 attack Matrix is a specific technical or security domain concept, it is not a widely known or commonly used term. Therefore, I cannot directly provide specific information on the Internet attack rate of this attack matrix.

In general, however, an attack matrix is a tool used to describe and analyze potential threats and security vulnerabilities. It can help security experts to identify potential attack paths and attack modes, so as to formulate effective security policies and protection measures.

For Internet attack rate, it usually refers to the frequency or probability of security attack events occurring on the Internet. This can be achieved by collecting and analyzing security event data, monitoring network traffic, and exploiting vulnerabilities.

If you are concerned about a specific security area or technology and need more detailed information about the Internet attack rate of the MCPs14x14 attack matrix, I recommend that you refer to relevant security research reports, professional literature, or contact a security expert for consultation.

At the same time, it is important to stay abreast of the latest security developments and vulnerability information in order to promptly understand and respond to potential threats.

**5.For all assets evaluate impact, likelihood, significance of attacks**

Assessing the impact, likelihood, and significance of an attack on all assets is a complex and multifaceted topic. Here's a breakdown of all three:

1. Influence

If successful, a plant asset appraisal attack can have a profound impact on plant operations and finances.

1. Economic losses: The reduction of asset value will directly lead to economic losses of the factory, affecting its profitability and market competitiveness.

2. Operational disruption: The damage or failure of important assets can lead to the standstill of plant production lines, which in turn affects the stability of the entire supply chain.

3. Reputational damage: Asset appraisal attacks may damage the reputation of the factory, making it lose the trust and support of customers in the market.

2. Possibility

The likelihood of a plant asset assessment facing an attack depends on a number of factors, including the severity of security measures and the capabilities and motivations of the attackers.

1. External threats: Hackers or malicious third parties may take advantage of security vulnerabilities to illegally evaluate or tamper with factory assets through remote access or physical penetration.

2. Internal risks: Employees, partners or contractors within the plant may conduct improper operations on asset valuation for profit driven or other reasons.

In addition, the increased digitization and networking of factory assets also increases the likelihood of assessing attacks. For example, factories that use technologies such as cloud computing and the Internet of Things are more vulnerable to remote attacks and tampering with their asset data.

3. Importance

Protecting the accuracy and security of asset appraisals is critical for plants.

1. Decision basis: Asset evaluation is an important basis for strategic planning, investment decision and resource allocation. If the evaluation results are inaccurate or tampered with, it will lead to wrong decisions and serious consequences.

2. Legal compliance: According to relevant laws and regulations, the factory needs to accurately evaluate and report on its assets. Failure to do so can lead to legal risks and compliance issues.

3. Competitive advantage: Protecting the accuracy and safety of asset evaluation helps the factory maintain its market position and competitive advantage to ensure an invincible position in the fierce market competition.

Therefore, the factory needs to attach great importance to the safety of asset evaluation, and take effective safety measures and technical means to ensure the accuracy and reliability of the evaluation results.

**6.Create (security) requirements**

|  |  |
| --- | --- |
| Risk | measure |
| 1.Security risks of equipment and facilities | Carry out risk identification and assessment regularly to identify possible safety hazards in the production process of the factory. |
| 2.Potential threats to fire safety | Develop risk control measures, classify the identified risks, implement the responsible person and the rectification time limit. |
| 3.Chemical management risks | Establish and improve the equipment and facilities management system to ensure the safe, reliable and efficient operation of equipment and facilities. |
| 4.Occupational health and health risks | Check and maintain equipment and facilities regularly to eliminate potential security risks in time. |
| 5.Environmental pollution and control risks | Regularly review and update the safety management system to meet the needs of the development of the factory. |
| 6.Financial risk and capital flow | Strengthen the publicity and implementation of the safety management system to ensure that employees understand and comply with the system. |
| 7.Marketing and marketing challenges | Implement the safety production target responsibility system and incorporate the safety production target into the enterprise performance appraisal system. |
| 8.Data and network security risks | Implement the safety production target responsibility system and incorporate the safety production target into the enterprise performance appraisal system.· |

**7.Create (security) controls**

1, mechanical safety protection

1. Mechanical equipment should be installed with protective covers, protective guardrail and other devices to prevent personnel from contacting dangerous parts.

2. Check and maintain mechanical equipment regularly to ensure the effectiveness of safety devices.

3. Strengthen the operation training of mechanical equipment and improve the awareness of safe operation of employees.

2, electrical safety device

1. The factory should set up leakage protection devices to ensure the normal operation of electrical equipment.

2. Electrical equipment should be equipped with safety measures such as overload protection and short circuit protection to prevent electrical accidents.

3. Carry out regular inspection and maintenance of electrical equipment to discover and eliminate security risks in time.

3, thermal safety control

1. Strictly control the temperature of high temperature equipment and areas to prevent thermal injury and fire accidents.

2. Heat preservation of high-temperature equipment and pipelines to reduce the loss of heat and harm.

3. Strengthen the operation and maintenance training of thermal equipment to improve the safe operation skills of employees.

4. Fire safety system

1. The factory shall set up perfect fire fighting facilities, including fire hydrants, fire extinguishers, etc.

2. Inspect and maintain fire fighting facilities regularly to ensure their effectiveness.

3. Strengthen fire safety training and drills for employees to improve their ability to cope with fire accidents.

5. Management of hazardous chemicals

1. Establish a hazardous chemicals management system to clarify the requirements for the storage, use and disposal of hazardous chemicals.

2. Label and classify hazardous chemicals to prevent misuse and confusion.

3. Conduct regular safety checks on hazardous chemicals to ensure the safety of storage and use.

6. Safety training and education

1. Regularly carry out safety training and education activities to improve employees' safety awareness and skills.

2. Conduct necessary safety training and operational guidance for new and transferred employees.

3. Strengthen employees' understanding and attention to production safety through case analysis and experience sharing.

7. Emergency response plan

1. Formulate the factory emergency response plan and clarify the response procedures and measures for all kinds of emergencies.

2. Strengthen the management of emergency equipment and materials to ensure that they can be invoked in a timely manner in an emergency.

3. Organize emergency drills regularly to test the effectiveness of the plan and the ability of employees to deal with emergencies.

8. Safety supervision and inspection

1. Establish and improve the safety supervision mechanism, and conduct regular safety inspection and evaluation of the factory.

2. Take timely measures to rectify and eliminate the hidden security risks and problems.

3. Strengthen the training and assessment of safety supervision personnel, and improve the supervision ability and level.

**8.Create (security) policy**

1. Establishment of safety management system

1. Develop and improve the factory safety management system, and clarify the responsibilities and requirements of various safety work.

2. Establish security management files to record the whole process and results of security management activities.

3. Regularly review and update the safety management system to ensure that it ADAPTS to the new situation and new requirements of factory safety production.

2. Hidden trouble investigation and rectification

1. Regularly carry out safety hidden danger investigation activities, and comprehensively identify and analyze various hidden dangers existing in the production process of the factory.

2. Conduct classified assessment of the hidden dangers identified, formulate rectification measures and plans, and specify the responsible person and time limit for rectification.

3. Track the progress of rectification to ensure that hidden dangers are rectified in a timely and effective manner.

3. Staff safety education and training

1. Regularly carry out safety education and training activities for employees to improve their safety awareness and safe operation skills.

2. Conduct necessary safety education and post operation training for new and transferred employees.

3. Strengthen the publicity of safety knowledge to improve employees' awareness and attention to safety production.

4. Emergency plan formulation and exercise

1. Formulate emergency plans for the factory, and clarify the coping procedures and measures for various emergencies.

2. Organize emergency drill activities regularly to improve the ability and level of employees to cope with emergencies.

3. Summarize and analyze the problems found in the exercise, and constantly improve the emergency plan and exercise plan.

5, equipment safety maintenance and inspection

1. Regularly carry out safety maintenance and inspection of factory equipment to ensure the normal operation and safety of equipment.

2. Repair or replace devices with potential security risks in a timely manner to prevent security accidents caused by device faults.

3. Create device maintenance files to record device maintenance and check results.

6. Implementation and assessment of safety responsibilities

1. Clarify the responsibilities and authority of safety management personnel at all levels to ensure the implementation of safety responsibilities.

2. Establish a safety assessment system, and conduct regular assessment and evaluation on the performance of safety management personnel.

3. Commend and reward individuals and groups with excellent safety management, and motivate employees to actively participate in safety management.

7, safety production supervision and inspection

1. Strengthen the supervision and inspection of factory safety production, timely discover and correct the existing safety problems.

2. Regularly organize safety inspection activities to comprehensively evaluate the safety production status of the factory.

3. Rectify and track the problems found in the supervision and inspection to ensure that the problems are completely solved.

8. Safety culture construction and promotion

1. Cultivate the safety culture of the factory, create a strong safety atmosphere, and make the safety awareness deeply rooted in the people's heart.

2. Promote safety culture and improve employees' safety literacy through activities such as safety knowledge competition and safety culture display.

3. Integrate the safety culture into the daily management and production and operation of the enterprise, making safety an important support for the development of the enterprise.

**9.Create access rules**

1. Visitor reservation and registration

1. Before entering the factory, visitors need to make an appointment with relevant departments or personnel in advance and obtain access permission.

2. After arriving at the factory, visitors need to register at the designated place, provide valid documents and appointment information, and accept the verification of security personnel.

2. Visitor ID and logo

1. Visitors must wear a valid visitor ID and logo in the factory area for identification and differentiation.

2. Visitors should take good care of their own documents and identifiers, and must not lend or use others' documents.

3. Factory area restrictions

1. Visitors shall strictly abide by the zone restrictions of the factory and shall not enter the production area, dangerous area or other prohibited areas without permission.

2. Visitors should follow instructions and warning signs in the permitted areas to ensure their own safety and avoid disruption to factory production.

4. Safety equipment and training

1. Depending on the purpose of the visit and the safety requirements of the factory, visitors may need to wear specific safety equipment, such as hard hats, protective glasses, etc. Visitors should comply with relevant regulations and use safety equipment correctly.

2. When required, the factory will provide the necessary safety training to ensure that visitors understand and comply with the safety regulations and operating procedures of the factory.

5. Prohibited acts and activities

1. Visitors are not allowed to smoke, drink or carry contraband in the factory area.

2. Visitors are not allowed to touch or operate plant equipment and machinery unless expressly directed and permitted.

3. Visitors are not allowed to take photos or videos without authorization, unless authorized by the relevant department or personnel of the factory.

6. Emergency handling

1. In case of emergency, visitors should remain calm, follow the command and arrangement of security personnel, and quickly evacuate to a safe area.

2. Visitors should be familiar with the location of emergency exits and evacuation routes in order to quickly escape in an emergency.

7. Penalties and fines for violations

1. For visitors who violate these rules, the Factory has the right to take corresponding punitive measures, including but not limited to verbal warning, prohibition of repeat visits, fines, etc.

2. The specific punishment measures will be determined according to the nature and severity of the violation, and will be decided by the relevant department or personnel of the factory.