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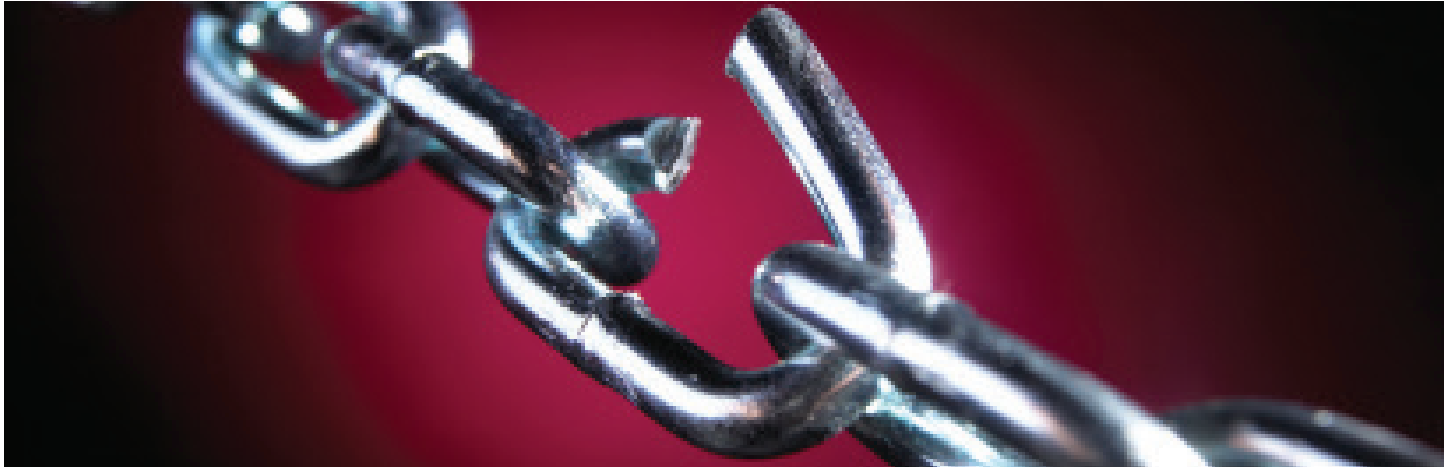
# Beware of Bottlenecks in Manufacturing

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DEFENDING AGAINST SUPPLY CHAIN DISRUPTIONS THAT LURK INSIDE YOUR OPERATION  
HELPING COMPANIES MANAGE RISK

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# The weakest link in your supply chain just may be in your plant



Thirty years ago, when a financial consultant first coined the term “supply chain management,” the focus was on getting materials in the door to use in manufacturing finished products. Today, the definition of supply chain has broadened to include the entire lifecycle of a product.

From sourcing raw materials to manufacturing finished goods to delivering products to customers to satisfying warranty commitments, successful manufacturers look at their supply chain holistically. At every step of this new supply chain paradigm, there are opportunities to improve, efficiencies to capture – and risks to manage.

When the supply chain is external, many of the risks are obvious. Companies look at the potential for disruption and often plan for alternatives that can be put in place quickly, but the parts of the supply chain that run through a company’s own operations are sometimes overlooked. And that can leave a company vulnerable when a weak link in the chain comes apart unexpectedly.

In this article, Travelers brings you information to help you manage internal supply chain risks. Topics include:

- Internal bottlenecks that can disrupt operations
- Risks and strategies for protecting critical equipment
- Risks and strategies for managing critical employees
- Insurance resources for effective supply chain risk management

At Travelers, we offer both online resources and risk management specialists who are ready to help protect your productive capacity.

*Scott Higgins*  
*President, Travelers Commercial Accounts*

# What keeps you up at night?



When it comes to a company's supply chain, there are multiple aspects that can break down and disrupt operations. Consider these examples, all of which are rooted in real-world experiences.

- **Will it get to you when you need it?** Keeping a manufacturing plant operating at full capacity requires a flow of materials that is dependable. A plant can be idled unexpectedly when a tsunami in Japan puts suppliers out of business, or volcanic ash high above Europe grounds the air transport scheduled to deliver materials to a manufacturer.
- **Will it be what you ordered?** Manufacturers issue specifications for both the quality and functionality of materials they expect to get from suppliers. But counterfeit components are a growing concern, as demonstrated by the seizure of 64,000 fake automobile parts in Dubai last year. The parts, which carried the brand names of major automotive companies but were only shoddy counterfeits, were declared a major threat to safety and destroyed. In addition to counterfeits,

contamination of raw materials can be an issue, through either the deliberate substitution of cheaper ingredients or the lack of proper handling and quality control by suppliers. Getting the wrong materials, especially if the problem is not caught before the manufacturing process, can severely impact the quality of a company's finished goods.

- **Will it affect your reputation?** The source of supplies can come back to haunt a company, as the Bangladesh factory collapse did for clothing retailers, or as mistreatment of Chinese factory workers did for a technology company. In today's hyper-connected world, the integrity of a supplier has implications for the manufacturer because customers often react to scandals by shunning the associated products.

These supply chain risks are well-recognized. But many others lurk within a manufacturing operation. The failure of both equipment and human assets can put an operation at risk. Not just any piece of equipment or human asset, however – in some cases, a broken machine can be repaired or a different worker can be hired. Instead, the risk comes from that **single point of failure** where, when something goes wrong, it is very difficult for a company to recover.

For example, a critical piece of equipment that cannot be easily replaced or repaired can bring production to a halt. Similarly, a specially trained worker who is injured may leave a company without the skills it needs to continue operations. These are examples of the bottlenecks that must be identified and addressed for effective risk management.

## Potential Impact of Manufacturing Bottlenecks

Event	Risk	Outcome
Fire, flood or other major event destroys critical equipment	Up to 40% of businesses fail after a disaster*	Business Interruption

\*Insurance Information Institute





## Bottleneck #1: Critical Equipment

For many types of industries, when a piece of equipment breaks down or is destroyed during a catastrophic event (for example, a fire or earthquake), a replacement can be brought into play quickly, even if at great expense, so productivity continues. Construction companies can replace bulldozers, trucks and jackhammers; a financial consulting firm can locate and install new computer equipment; a food services company can obtain new ovens and refrigerators.

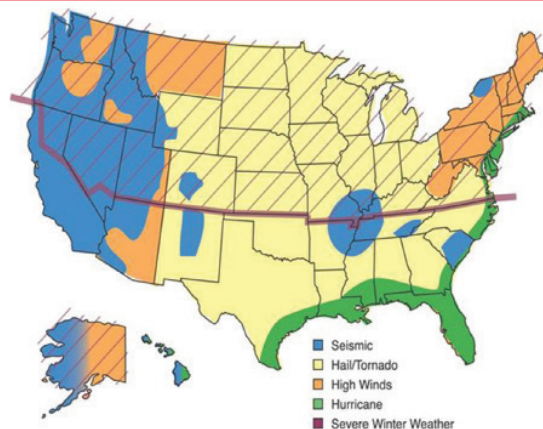
In manufacturing, however, machinery is often highly specialized. Purchased years before a breakdown, it may have been heavily modified over time with upgrades and adaptations. When a customized piece of equipment like this malfunctions and cannot be repaired, it may be impossible to replace at any price, or a replacement may take too long. For example, a machine that is made by only a single small company in Germany may have a three-year waiting period from placement of order to delivery of the equipment.

Even for lesser equipment that under normal circumstances can be quickly replaced, market conditions may change. A natural disaster can turn normally sleepy markets with ample supplies of second-hand equipment into hotbeds of shortages, escalating bids and disappointed would-be buyers. And as the map at right indicates, there are no areas of the United States that are risk-free when it comes to natural catastrophes.

Critical equipment can be sidelined by more than just breakdowns or disasters. For example, power outages can also take a machine offline and disrupt productivity. If an outage is unexpected or if there is a reduction in voltage (a brownout), equipment could be damaged.

If a piece of equipment is critical to a manufacturer's operations, it has the potential to be a single point of failure – a bottleneck that can shut down production. And that makes it important to consider high-value machinery as part of the supply chain that should be managed to reduce risk.

### EVERYWHERE IS VULNERABLE TO DISASTER



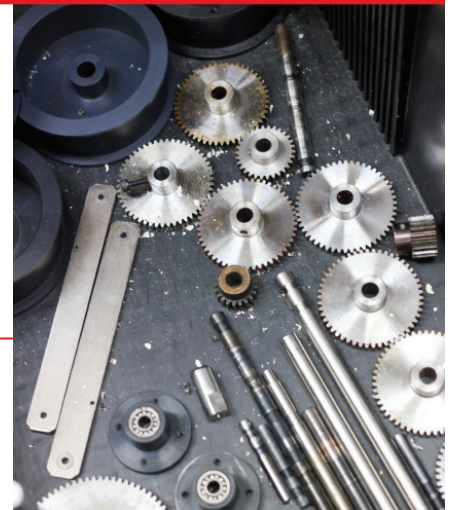


# Managing Equipment Risks: The Business Continuity Plan

Your company may already have a business continuity plan on the shelf – the prescription for what to do when disaster strikes and production comes to a halt. However, many plans fail to address all potential bottlenecks, such as the steps to take when a critical piece of equipment breaks down. The most effective plans help companies prepare for the unexpected, protect assets, respond to emergencies, and recover fully operational capabilities in a timely manner.

The following is a checklist that Travelers uses when our risk control consultants work with customers to help them create effective contingency plans for equipment:

- **List of key equipment.** The first step is to identify key equipment, taking note of any factors that could make it difficult to replace or repair. Key equipment either has a high dollar value and/or is critical to the operation of the business.
- **Inventory of spare parts.** The plan should identify all spare parts that are kept on site, as well as provide a list of sources for purchasing necessary equipment that could be used to repair or replace a non-functioning machine. Each year, the list should be updated with pricing and delivery times for obtaining necessary parts.
- **Rental equipment.** A list of sources for rental equipment should be developed, with details about cost for rental, set-up, breakdown, shipping both ways and estimated time from placement of order to start-up. If permits are required to move heavy equipment or install a new machine, the necessary steps should be identified.
- **Contractors.** Several contractors who are qualified to work on or repair equipment should be identified, including information about their capabilities and availability.
- **Business loss alternatives.** To avoid losing sales or falling behind on contractual obligations, a manufacturer may want to consider several alternatives if an equipment failure disrupts production. These include making arrangements with competitors to outsource work during an emergency; keeping inventory on hand to provide product to customers when the manufacturing line is down; and running other equipment longer hours (requiring overtime shifts) to make up for lost production.
- **Alternative sites.** Among considerations in the business continuity plan can be identifying or developing alternative sites: A “cold” site is a place where machinery and people could be placed to restart production in the event of an emergency. A “warm” site typically makes use of someone else’s resources in off hours to allow return to production much more quickly. A “hot” site, often implemented in the technology world, mirrors existing facilities and is run in tandem with current operations.



## Getting Proactive with Your Supply Chain

In its 2013 annual report, the Supply Chain Risk Leadership Council advised companies to become proactive about managing risk:

“We believe it is critical that enterprises, in addressing emerging supply chain risks, move from being reactionary to being proactive and resilient, KNOWING that at some point, somehow, and perhaps frequently, your business will be impacted by a supply chain disruption of one form or another.

Therefore, it is no longer sufficient to tackle many issues once they have started to directly affect your enterprise. They should be factored into your overall supply chain planning and operational processes in advance, with plans in place to respond quickly and effectively when these risks become reality.”

# Bottleneck #2: Critical Employees



When a machine is taken out of production by something like a factory fire, the impact on operations is direct and obvious to the manufacturer. With human assets, the impact from a change in status of a single worker may be more subtle – perhaps even unnoticeable until something happens and operations are disrupted.

At one manufacturing plant, this lesson was learned the hard way. A single worker who was a tool-and-die expert was responsible for maintaining machinery throughout the plant, making repairs on the spot. When cost-cutting measures went into effect, he was laid off as a non-essential employee. However, efficiency quickly went downhill as equipment broke down and other repair arrangements that were more time-consuming and less satisfactory had to be made. Once the manufacturer realized how valuable the employee was, he was rehired.

Many companies have key employees with specialized skills who cannot easily be replaced. Perhaps these employees are familiar with legacy systems within a plant that less experienced workers do not know how to operate. They may know how to program digital equipment using obsolete computer coding. Or they may have skills that are no longer routinely taught in school, such as welding.

These high-value employees can become incapacitated or unavailable to a manufacturer in a number of ways. They may age in place and retire; they may be injured on the job and not have their workers compensation claim managed in a way that gets them back on the job quickly; they may obtain other employment during a plant closure and not return; or they may simply find another job that they prefer.

In addition to high-value employees, a manufacturer's general workforce is also critical to smooth operations. Because of the nature of manufacturing, where employees are often dealing with heavy equipment and stressful or repetitive motions, workers compensation injuries can be a major threat to plant productivity. In 2011 (the last year for which statistics are available), the U.S. Bureau of Labor Statistics stated that more than 11.6 million people worked in the manufacturing industry – and more than 500,000 suffered an injury severe enough to remove them from their jobs at least temporarily.

With both equipment and human assets identified as critical links in the internal supply chain, it becomes imperative for manufacturers to plan strategies for addressing disruptions, just as they would for their external supply chain.

## Plant Consolidation Spikes Workers Compensation Cases

Sometimes when high-value equipment and high-value employees come together, the result is workplace disruption and high costs. Effective risk management, however, can turn the situation around.

When a Connecticut manufacturer consolidated machinery and workers from two plants being closed into the company's one remaining facility, workers compensation claims jumped 48 percent and the cost per claim rose 84 percent. The largest category of injuries was musculoskeletal disorders.

Working in tandem with risk management specialists from Travelers, the manufacturer's human resources and safety staff soon realized that the transferred equipment was not ergonomically designed which was addressed with retrofitting. But a bigger problem was the lack of adequate training and communication so that workers understood the need to get help early, before injuries became intractable.

By aggressively tackling both ergonomic issues and post-injury management practices, Travelers and the manufacturer were able to reverse the situation, improve the workplace environment, and return to full productivity.

## The Hidden Costs of Workers Compensation Injuries

Meeting the needs of an injured worker can be costly, between medical treatment and time off work. However, the American Society of Safety Engineers has concluded that the indirect costs and impacts of a worker injury are four to 10 times greater than the direct costs. They include:

- Hiring temporary workers with adequate skills to replace the injured employee.
- Loss of operational time, which results in fewer products completed to sell to customers.
- Impact on morale of other employees, who may question the workplace safety environment.
- Administrative costs for handling the injury claim.

# Managing Employee Risks: Workers Compensation Strategies

Protecting productivity when it comes to human assets requires multiple layers of initiatives. Succession planning to replace aging critical employees is important, as are recruiting employees with the right skill sets and cross-training employees. But perhaps the most critical strategy is to manage workers compensation risks – both before an injury ever occurs and afterwards when steps can be taken to support appropriate care for the employee, reduce costs and return the employee to work as quickly as possible.

The following are Travelers' recommendations for the key steps to managing workers compensation risks in a manner that can help keep critical employees on the job:

1. Hire the right people. Use a rigorous hiring process to screen for employees who are less likely to take risks and, therefore, are less likely to be injured during their first year on the job while they are still learning the ropes.
2. Avoid injuries proactively. Create a culture of safety that lets employees know that taking precautions is a top priority. Whether there are ergonomic issues to address, dangerous equipment that needs safety features installed, or complicated safety requirements that may be ignored if not rigorously enforced; the best way to manage workers compensation risks is to avoid accidents in the first place. Manufacturers should follow best practices to create a safer work environment. In addition to industry standards,
3. Return employees to the workforce quickly. Work closely with your insurance carrier to manage workers compensation claims in a way that returns injured workers to an appropriate job as quickly as possible. Studies have shown that employees recover more rapidly, and medical costs are reduced, when they are brought back into the workforce as soon as medically cleared for duty.

manufacturers can consult with their insurance carrier to understand the types of losses that are most frequent within their industry and the types of prevention measures that others have found to be effective.





## Managing Supply Chain Risks: Insurance as a Resource

A fire destroys a factory, shutting down production for the foreseeable future. A flood recedes, leaving damaged equipment behind. A tornado rips off the roof, exposing equipment to the elements. Manufacturers carry property damage coverage for just such instances.

To protect their business from supply chain disruptions, however, companies may want to think outside the box with the help of their insurance broker. By putting in place the right coverage, a business can help protect its cash flow so that it can meet payroll during a disaster as a way to retain high-value employees. Companies also can arrange for insurance to cover the cost of equipment breakdown, losses to third parties, and business disruption due to supply chain failures.

In addition, when manufacturers turn to Travelers, they can tap into the many resources provided to help customers manage risks. These include online information, tools and templates; risk control consultants who specialize in the manufacturing industry; and claims professionals who are effective at resolving claims quickly.

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### In conclusion...

As a manufacturer, keeping your internal supply chain intact – by having all the right equipment and right people in place – allows you to maximize productivity. If a chain is only as strong as its weakest link, it is important for a company to pay close attention to potential points of failure. With the help of their insurance broker and Travelers, manufacturers can manage the risks represented by both equipment and human bottlenecks and keep their products flowing.





**Prepare, Prevent, Mitigate, Restore Supply Chain Risks on Travelers.com:**

<https://www.travelers.com/prepare-prevent/protect-your-business/supply-chain-management/index.aspx>

**Supply Chain Management Institute:**

<http://scm-institute.org>

**Travelers Products and Services for Manufacturers:**

<https://travelers.com/business-insurance/mid-sized-business/manufacturers-insurance/index.aspx>



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