

PPE & Sterilization Equipment

August 2020

Overview

The outbreak of coronavirus has led to closures of retail stores, restaurants, office buildings, hotels and other establishments. As these businesses resume operations, demand for sterilization and personal protective equipment is expected to increase.

A lockdown on the scale of the one in early 2020 is unlikely, even if cases soar to previous levels during this current round of coronavirus cases, because state and local officials face pressure to keep the economy open. Furthermore, school reopenings and the approaching flu season will further boost demand for personal protective equipment. Sterilization and personal protective equipment will be needed to reduce the risk of transmission, and this poses risks for buyers of these products.

Price Risk Score

3.8

High price risk suggests that price disruptions are likely due to surging demand for sterilization and personal protective equipment from both consumers and businesses combined with a limited supply of products.

Price Risk At a Glance

-  **Demand risk** is heightened because essential workers and consumers, who previously did not wear PPE, are now purchasing products in much greater volumes.
-  **Substitute risk** is very high because few products exist that match the effectiveness and functionality of PPE that is currently on the market and some of this equipment is now required to be worn via government mandates.

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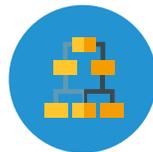
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Price Risk Scorecard

How would a second wave impact price risks in the PPE & Sterilization Equipment market?



Labor Risk

Factor	Risk Level	Score
Reliance on Labor	Medium-High	3.7
Wage Costs	Low-Medium	2.4
Overhead Costs	High	3.9
Reliance on Manufacturing	Very High	4.4
		3.6

Weight
25%

Scarcity/Availability Risk

Factor	Risk Level	Score
Lead Time	Very High	4.3
Warehousing Ability	Medium	2.9
Imports	Medium	3.3
Substitutes	Very High	4.3
Specialization	Low	2.2
		3.4

Weight
20%

Demand Risk

Factor	Risk Level	Score
Business Demand Reliance	Very High	4.4
Consumer Demand Reliance	Medium-High	3.6
		4.2

Weight
35%

Input Risk

Factor	Risk Level	Score
Input Prices	Very High	4.6
Supply Chain Risk	High	4.0
Financial Health	Low	2.3
		3.6

Weight
20%

Overall Price
Risk:

3.8

High

Labor Risk

Factor

Risk Level Explained

Key Indicators

Reliance on Labor

Measures the need for on-site staff, rather than remote workers or automated machinery.

Suppliers' **medium-high** level of risk stems from moderate reliance on labor, which is driven by hiring trends across the United States.

- According to the Institute for Supply Management (ISM), employment in 16 out of 18 manufacturing industries declined in May 2020. Only 2 out of 18 industries registered increases in employment in both June and July.
- The decline in employment across most manufacturing industries will reduce labor shortages for manufacturers and distributors of sterilization and personal protective equipment as laid-off workers look for new jobs.

Wage Costs

Represent the percentage of suppliers' revenue that must be dedicated toward paying workers.

Suppliers' **low-medium** impact from wage costs is driven by the **low-moderate** proportion of wages as a share of revenue.

- Workers that work overtime will be eligible for overtime pay at higher hourly rates, increasing wage costs. For instance, employees at a factory in Pennsylvania worked in 12-hour shifts and did not go home for 28 days to maintain production and ensure nobody caught the disease. Workers that work overtime will be eligible for overtime pay at higher hourly rates, increasing wage costs.
- Amazon hired 100,000 warehouse workers in April and gave warehouse workers a \$500 bonus in June, thereby raising wages as a share of revenue.

Overhead Costs

Refers to the fixed and variable costs suppliers incur to support their operations.

Suppliers' **high** impact from overhead is driven by the **high** proportion of overhead as a share of revenue.

- An N95 Face Mask Machine costs about \$350,000, while a bottle filling machine for bottling detergents and disinfectants can cost about \$10,000. As production ramps up, investments in machinery increase overhead costs.

Labor Risk Continued

Factor	Risk Level Explained	Key Indicators
<p>Reliance on Manufacturing</p> <p>Measures the need for manufacturing processes to produce a product.</p>	<p>Suppliers' very high reliance on manufacturing results in very high risk because disruptions to manufacturing operations will harm productivity.</p>	<ul style="list-style-type: none">• Milliken & Company and Contec Inc. have partnered to double production of the disinfectant sporicidin.• 3M announced it planned to double production of respirators during 2020.• GOJO, which produces Purell hand sanitizer, is working to expand production.

Takeaways



Because the industry utilizes automated manufacturing equipment, vendors can maintain high levels of output with a smaller workforce.



Manufacturing workers tasked with producing these items may be eligible for overtime or hazard pay which could be passed onto buyers in the form of higher prices.

Scarcity/Availability Risk

Factor	Risk Level Explained	Key Indicators
Lead Time Measures the average amount of time between a buyer creating an RFP and delivery of market products.	The market's very high level of risk associated with lead time is driven by the very high likelihood of delays within the market.	<ul style="list-style-type: none">• The lead time for hand sanitizer from many major manufacturers was extended to about three to eight weeks in mid-June, which is significantly longer than what is typical. However, many distilleries which had switched to producing hand sanitizer are now reporting excess inventory.• As was the case in March and April, vendors may be forced to prioritize government buyers and healthcare providers when filling PPE orders.
Warehousing Ability Measures the ease with which the products can be stockpiled.	Buyers have a moderate level of difficulty maintaining a large inventory of market products, indicating medium risk.	<ul style="list-style-type: none">• Laundry detergents break down about six months after opening and nine months if the package is not opened.• N95 masks expire in three to five years, making it easier to stockpile these goods.• The Octo Respirator Mask, which competes with N95 masks, can be stored for 10 years without degrading.
Imports Measures the strength of imported products within the market.	The market's medium level of import risk is driven by reliance on imports and the threat of export bans in countries which manufacture sterilization and personal protective equipment.	<ul style="list-style-type: none">• A Malaysian firm, Top Glove Corporation Bhd, accounts for one in five medical gloves produced worldwide.• The United States government announced a ban on respirator exports from the United States in April.• 3M announced in April that it intended to import 166.5 million respirators from China.• According to S&P Global, US imports of personal protective equipment declined 21.6% in the first half of July amidst an increase in domestic production.

Scarcity/Availability Risk Continued

Factor	Risk Level Explained	Key Indicators
<h3>Availability of Substitutes</h3> <p>Measures the ease with which buyers can use different products to fulfill the same need.</p>	Suppliers face a very high level of risk in this market due to the very low availability of viable substitutes.	<ul style="list-style-type: none">• In April the Journal of the American Medical Association published an article that suggested face shields could be used as an alternative for face masks.• Reusable elastomeric masks could also be used instead of disposable N95 masks, relieving shortages.• Ultraviolet light (UV-C) could be used for sterilizing items instead of heat. Some companies now offer UV-C disinfection boxes and handheld disinfectant devices.• N95 masks could be sanitized with UV light, allowing them to be reused. This would reduce demand for these items.
<h3>Specialization</h3> <p>A measure of the level of customization needed for each buyer of market products.</p>	The low level of specialization in this market contributes low risk because market products are generally standardized for each buyer.	<ul style="list-style-type: none">• Medical gloves, medical uniforms, safety eyewear and detergent are commodity goods with low levels of product specialization.• Respirators may be customized to filter out specific particles.

Takeaways



Most of these products have few viable substitutes, reducing the ability of buyers to leverage alternative products.



Manufacturers are working to divert resources from elsewhere in their company to ramp up production, which has alleviated shortages for some of these products such as hand sanitizers.

Demand Risk

Factor	Risk Level Explained	Key Indicators
Business Demand Reliance A measure of necessity for the given products to properly operate downstream buyers' businesses.	The market's very high impact from business demand reliance is driven by the very high amount of revenue generated through B2B sales.	<ul style="list-style-type: none">Indoor mask mandates have been issued in many cities and states, raising demand from businesses.The California Hospital Association told ABC News in July that it expects PPE shortages to last 2 years.The University of Rochester announced in August that 20% of the 15,000 nursing homes it surveyed reported PPE shortages.The Malaysian rubber glove manufacturers association MARGMA said that global demand for gloves would increase 11.0% in 2020.In April, 3M sued one of its distributors for price gouging; 3M accused the distributor of selling N95 respirators to the State of Florida at excessively high prices.
Consumer Demand Reliance A measure of necessity for the given products for the average consumer.	The market's medium-high impact from consumer demand reliance can be seen through the medium-high amount of revenue generated through B2C sales.	<ul style="list-style-type: none">Consumer demand for laboratory sterilizers, medical uniforms and safety eyewear is low.People are buying more respiratory protection equipment, medical gloves and disinfectants for everyday use.A Morning Consult poll in July found that 95% of adults in the US wear face masks.A July Hill-HarrisX poll of registered voters found that 82% favored a national mask mandate.Etsy sold \$346 million worth of masks in the second quarter of 2020, while Gap sold masks worth \$130 million.According to Nielsen, sales of medical masks in the United States rose 319.0% year-over-year in February.

Takeaways



As more local and state governments require masks for people entering businesses, demand from consumers will increase thereby contributing to the shortage of market products.



A very high level of demand from businesses means that prices could rise sharply if the pandemic worsens as the flu season approaches.

Input Risk

Factor	Risk Level Explained	Key Indicators
Input Price Risk A measure of the fluctuations in costs associated with inputs used to manufacture a product.	Suppliers' very high level of input price risk is driven by the very high level of volatility in input costs and the high proportion of revenue devoted towards purchasing costs.	<ul style="list-style-type: none">• The price of acetone, an ingredient used in the production of disinfectants, tripled in China from April to June.• The price of isopropanol (IPA), an input used in disinfectants, rose from under 50 cents per pound at the beginning of March to about \$1.25 per pound at the end of March. However, IPA prices stabilized at the end of June.• The price of benzene, which is used to make detergents, fell 50.0% in April and rose 30% in June 2020 as a result of rebounding crude oil prices.
Supply Chain Risk The measure of risk associated with purchasing from upstream suppliers and selling to downstream buyers.	Suppliers' high level of supply chain risk stems from the high levels of risk among key buyers and upstream suppliers.	<ul style="list-style-type: none">• The Food and Drug Administration has warned that some hand sanitizers contain methanol, a harmful substance. These sanitizers could be recalled, raising shortages.• The Trump administration announced in June that it would allow benzene and other impurities inside alcohol-based hand sanitizers. This will alleviate shortages of hand sanitizers by allowing more types of ethanol to be used in the production of hand sanitizers.
Financial Health A measure of the financial standing of an average provider of market products.	Suppliers' low level of financial health risk is driven by strong demand for market products which are needed now more than ever due to the pandemic.	<ul style="list-style-type: none">• According to some legal experts, companies switching to Good Samaritan production of personal protective equipment and other items could be subject to liabilities.• Corporate bankruptcies are expected to rise as a result of the pandemic and the collapse in oil prices. However, this should not affect producers of sterilization and personal protective equipment due to high demand.

Takeaways



Fibers, plastics and rubber have been increasingly difficult to procure due to reduced global output in early 2020. This could cause PPE manufacturing to slow as well as place upward pressure on price due to supply constraints.



The prices of inputs such as acetone and benzene have increased sharply since April.



The upcoming hurricane season poses a risk to petroleum refineries along the Gulf coast. This is expected to cause increases in the price of plastic materials and chemicals used in the production of personal protective equipment and disinfectants.

Price Disruption Scale

How do the price risk scores across submarkets compare to the overall score for the PPE & Sterilization Equipment market?



Laboratory Sterilizers 3.6 – MEDIUM/HIGH

Laboratory sterilizers display a medium-high risk of price disruption due to demand for these products in healthcare facilities. High temperature sterilizer prices rose 35.7% overnight in May. Sudden overnight price spikes have been typical as demand spikes at unpredictable moments.



Overall Price Risk Score: 3.8

PPE & Sterilization Equipment

Most of these submarkets carry a **high** level of risk; however, Detergent has a medium level of risk, while Respiratory Protection Equipment is very high risk.



Medical Gloves 4.1 – HIGH

Medical gloves display a high risk of price disruption due to very high demand for these products and low rubber harvests abroad. Medical personnel and workers in essential industries will need medical gloves to reduce the risk of infection. The consumer price of Safeguard nitrile gloves increased as much as 542% on August 12, and has been subject to extreme, albeit brief, price spikes rather unexpectedly.



Disinfectants 3.7 – MEDIUM/HIGH

Disinfectants have a medium-high risk of price disruption stemming mostly from demand for these products; surfaces and objects need to be disinfected more frequently to reduce the risk of infection. Consumer prices of Diversey Virex disinfectant increased as much as 70.3% overnight in June, but has fluctuated up and down during that period.



Medical Uniforms 4.0 – HIGH

Medical uniforms carry a high risk of price disruption due to surging demand for these products from the healthcare sector; some hospitals have reported shortages of medical uniforms and lead times extending several months.



Respiratory Protection Equipment 4.4 – VERY HIGH

Respiratory Protection Equipment has a very high level of risk due to strong demand for these products, which are needed to protect medical personnel and providers of essential services. The consumer price of KN95 masks rose 24.4% on August 3.