Freshness is cumulative

Risk management, shrink reduction and brand protection in the era of FSMA.

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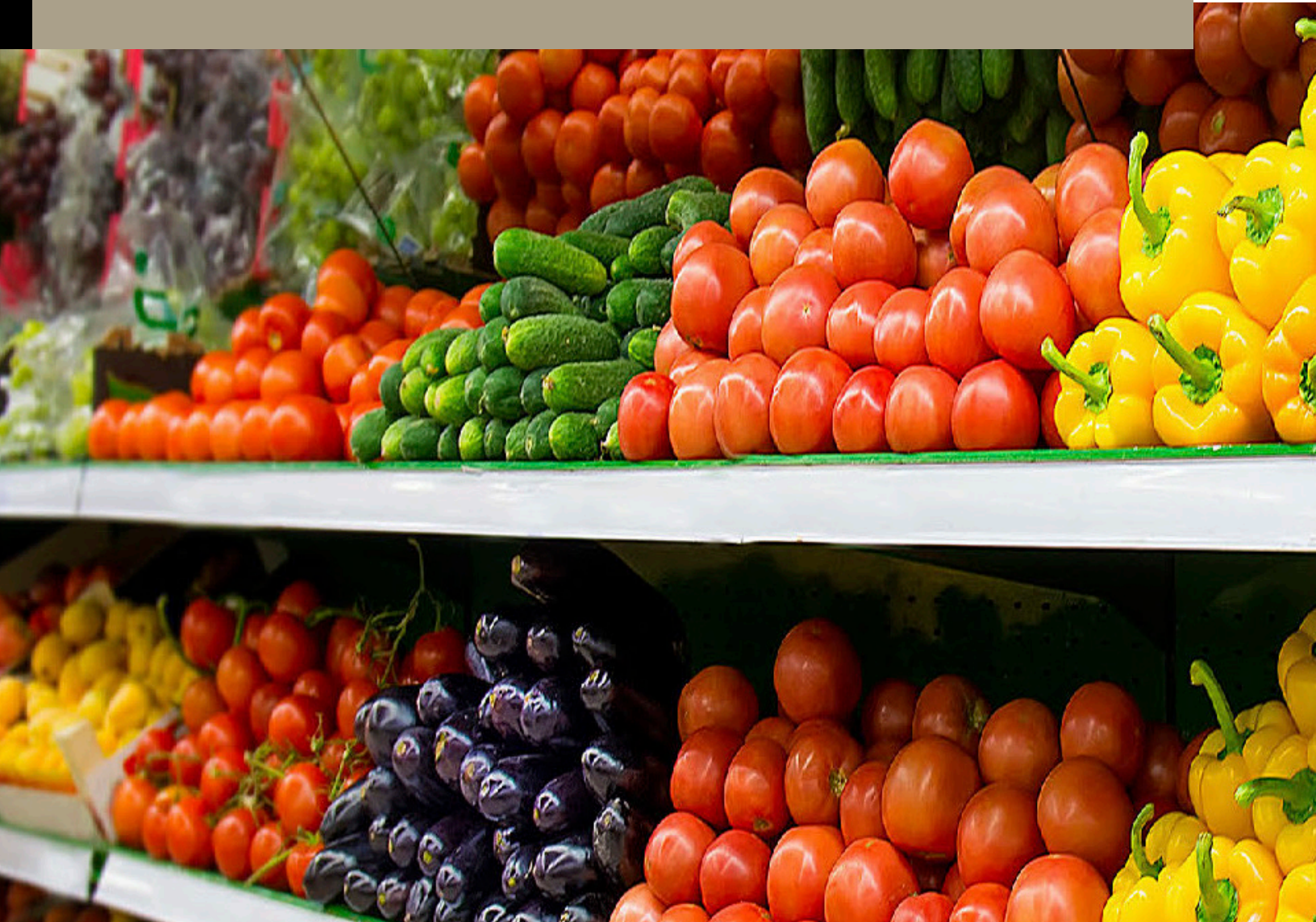
The rule

FDA's Final Rule on Sanitary Transport of Human and Animal Food requires stakeholders to implement and document a program ensuring the safe transport of food within the United States. The rule in many aspects is vague and open to different interpretations. However, one thing is clear. If there is a food safety incident the following will most likely be required:

- Proof that vehicles used in transport did not allow food to become unsafe

- Written procedures of the company's food transport safety program

- Verification employees were adequately trained on proper safe pre-cooling and transport procedures

- Proof product was transported under safe temperature conditions

Temperature monitoring

Instead of reacting to a food safety transport incident, Copeland Cargo Solutions recommends a proactive approach—one that mitigates risks, reduces shrink, protects your brand and modernizes your supply chain. First, recognize freshness is cumulative. The perishable supply chain is complicated, with many handoff points. If temperature abuse occurs in any segment, food quality and safety can be compromised, shrink occurs and your brand may suffer. Second, recognize technology has advanced significantly whereby automated temperature monitoring records can be generated in both real and near-real time with no human intervention. It is time to leverage these technology advances and modernize your program.

The steps

Here are some basic temperature monitoring guidelines that can help you create your written program for FSMA compliance.

Step 1: establish precooling processes

First, before product is transported, it should be pre-cooled by the supplier to the correct transit temperatures. It is important to get the thermal mass of the perishable product to the correct temperature before shipping, as this can have a direct impact on product quality, safety and shelf life. If product is not pre-cooled, it can continue to aspirate in the enclosed truck trailer or other container. In some cases, the product will actually generate heat (called respiration), which results in product degradation. Product should be pulped to

ensure proper temperatures have been reached before loading begins. Successful temperature control starts at the beginning with the supplier. Note pre-cooling of the transit container by the carrier should occur when the container is connected to the cold storage unit. This is because product temperature and container temperature need to be in equilibrium. A container not connected to a cold storage unit should NOT be pre-cooled. This is because when doors are opened and loading occurs, hotter air will enter the container causing condensation. This can create numerous problems including the formation of ice and structural damage to shipping containers.

Step 2: establish proper loading practice for optimal air circulation

Product should be loaded in a manner that promotes air flow through the transport container. Product should not be loaded above the "load" line. In addition, the product packaging itself should promote air flow.

Step 3: establish & communicate proper transport temperatures

After pre-cooling and proper loading, product is then shipped to distribution centers within acceptable temperature ranges for the particular commodity. This practice should be considered for any perishable products backhauled to the DC as well. The following are commonly accepted transport temperature ranges for various commodities that you can communicate to your supply chain stakeholders:

- 56°F (13.3°C) to 62°F (16.6°C)–bananas

- 42°F (5.5°C) to 54°F (12.2°C)–tomatoes, yellow onions, potatoes

- 32°F (0°C) to 39°F (3.8°C)–general produce. This is the largest category and includes leafy greens, apples, broccoli, carrots, cauliflower, mushrooms, green onions, berries, corn

- 28°F (-2.2°C) to 39°F (3.8°C)–meat (beef, pork, poultry, seafood)

- 32°F (0°C) to 39°F (3.8°C)–dairy

- -10°F (-23.3°C) to 15°F (-9.4°C)–general frozen foods

Step 4: temperature monitoring device & placement procedures

Place a digital temperature monitoring device on your load to monitor product temperatures as the reefer download will only provide ambient container reads and

may not have been calibrated recently. These devices will give you the most accurate information. Establish consistent placement location(s) in the trailer.

Step 5: receipt at distribution center

When product is received at the distribution center, quality assurance staff checks the data from the temperature monitoring device for any temperature breaches. It is important this data is checked because it provides historical information on what happened to product during transit. A pulp temperature upon arrival in and of itself is not sufficient as it only provides temperature at that particular point in time. There have been blind tests where product arrived at a distribution center, was pulped, and shown to be at the correct temperature. However, when data from the temperature monitoring device was reviewed, it showed the refrigeration unit had been turned off for a significant amount of time during transit, creating the risk of product degradation and bacteria growth. Though the damage might not be immediately visible, this temperature abuse would be apparent in the future quality and shelf life of the product. Temperature monitoring devices provide historical data and help prevent the receipt of substandard products. They are the "eyes and ears" of quality teams when product is outside of their direct control.

Step 6: distrubtion center to store

Once product is consolidated at distribution centers it is regrouped and sent to the individual store or restaurant location. Product is shipped either on company-owned vehicles or subcontracted out to carriers. This area of the cold chain is subject to the same risks, but many times independent monitoring devices are not used to validate temperatures have been maintained. However, freshness is cumulative and Copeland Cargo Solutions recommends you complete your continuous monitoring program by monitoring this segment.

Step 7: stationary & yard monitoring

Don't forget perishable products held in stationary facilities are part of the cold chain. Make sure you address this segment with a facility monitoring program. It is also important to consider product preloaded for shipment and waiting for transport in the yard. These temporary holding facilities should be monitored as part of your comprehensive program as well.

Best practices summary

A world-class temperature monitoring program includes the following elements:

- Recommended safe temperature transport range guidelines for the most popular commodities established and communicated down the cold chain.

- Requirement that perishable products be pre-cooled to acceptable transit temperatures before transport begins.

- Documented handling procedures when loading into a container attached to a cold storage unit versus a container not attached to a cold storage unit.

- Temperature monitoring devices utilized on perishable products in all segments of the cold chain including supplier to distribution center, distribution center to retail/restaurant location and stationary monitoring. These recording devices will help suppliers, carriers and retailers pinpoint where weak points in the cold chain exist so solutions can be implemented to mitigate risk, reduce shrink and protect your brand.

- A system where temperature logs of your cold chain are available anywhere and on demand.

Remember, freshness is cumulative. Don't wait for a FSMA audit. Implementing these measures today will mitigate your risks, reduce shrink and protect your brand.

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