



Diversey Celebrates World Food Safety Day 2022

Impact of Direct Contact Intervention Chemicals on Food Processing Equipment

Intervention approved for Direct Food Contact Intervention chemicals, such as Peracetic Acid, Chlorine Dioxide, Acidified Sodium Chlorite, Organic Acids (such as Citric Acid) and Bromine Acid have been recognized by the Food Safety Inspection Service (FSIS)- an agency in the US Department of Agriculture (USDA). The impact of the intervention on the product is clearly defined, however, what is the impact of these interventions on the food processing equipment and environment they are applied too?

Chemical interventions can be used in various places throughout food processing plants depending on the industry. In red meat production for example, interventions are used during harvest (hypobromous Acid in carcass spray cabinets), in fabrication (Acidified Sodium Chlorite, as continuous belt treatment) and in further processing (Peracetic acid -directly applied onto the product surface). Chemical interventions listed by level of corrosiveness from most to least, with consideration to both liquid and vapor phases are:

- Acidified Sodium Chlorite
- Chlorine Dioxide and Sodium Chlorite
- Chlorine
- Bromine
- PAA
- Organic Acids

Chemical interventions also come into direct contact with food processing equipment. They include but are not limited to conveyors, stainless steel equipment, gaskets and processing guards. and ultimately the floor area to the drain. Chemical interventions can adversely affect production equipment through time. Depending on the surface, the impact can be minimal or quite severe depending on dose and contact time.

Stainless Steel equipment used in almost all production equipment is relatively safe to the effects of chemical interventions. Exceptions can be observed if the stainless steel is not 316 grade. 316 grade

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stainless steel, unlike substandard grades can withstand the effects of chemical interventions. However, if pitting on the stainless steel is present, chemical interventions may have an impact on those surfaces.

Soft metals such as copper and brass, will be impacted over time by chemical interventions. Again, corrosion rate depends on the concentration, dose and the use frequency of the chemical.

Teflon parts and conveyor belts made of food grade Poly Vinyl Chloride (PVC) are generally not impacted by chemical interventions.

Gaskets can also be impacted by chemical interventions. Gaskets and o-rings made of ethylene propylene diene monomer (EPDM), perfluoroelastomer (FFKM), Tetrafluoroethylene propylene (FEMP) and like materials are not generally impacted. Polypropylene gaskets are minimally impacted. However, HPD gaskets will dry out and break over time.

Chemical interventions also contact the floor in the area where they are used to the drain. Acidified Sodium Chlorite will erode a concrete floor over time.

When introducing any chemical intervention into a food processing plant, equipment corrosion over time, can be a concern. When choosing an intervention chemical, the possibility of corrosion of the materials that make up food processing equipment and building materials should be taken into consideration.

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