# Trisodium Phosphate

| INTERVENTION SUMMARY | |
|---|---|
| **Status** | Currently available |
| **Location** | Pre- or post-slaughter |
| **Intervention type** | Surface treatment of hide or warm carcass |
| **Treatment time** | 10-15 seconds |
| **Regulations** | Approved in US, not in the EU or Australia |
| **Effectiveness** | 1 log reduction |
| **Likely cost** | Installation of wash cabinet between A$500,000 and A$1 million<br>Ongoing chemical costs not known |
| **Value for money** | Not recommended |
| **Plant or process changes** | If no wash cabinet already in place, large amounts of space will be required |
| **Environmental issues** | Large amounts of water will be used<br>Ecological considerations for effluent disposal<br>Consider recirculating if using as a hide wash |
| **OH&S** | The concentrate is corrosive, and toxic fumes may be produced |
| **Advantages** | Activity is not affected by subsequent carcass washing |
| **Disadvantages or limitations** | Can cause corrosion of metal |

## Trisodium Phosphate

Trisodium phosphate (TSP) is an alkaline cleaning agent that has been used as a household cleaner for many years. It works by disrupting the bacterial cell membrane and causing the contents to leak out, though the exact mechanism is not fully elucidated (Oyarzabal, 2005). Trisodium phosphate solutions have been approved for treatment of beef carcasses in the US Code of Federal Regulations (21 CFR 182.1778; FDA 2013).

Disposal of TSP in effluent is an environmental consideration as it will aggravate eutrophication in ponds and lakes. Eutrophication is the development of excess organic material, e.g. algae blooms, following nutrient (nitrogen or phosphorus) overload. Recycle wherever possible. Consult manufacturer for recycling options.

Research showed that spray-washing with trisodium phosphate (TSP) reduced contamination of beef brisket, and that it may inhibit bacterial attachment, thereby allowing easier bacterial cell removal by washing (Cabedo *et al.*, 1996; Gorman *et al.*, 1995; 1997; Zulfakar *et al.*, 2013). A 10% TSP solution has also been evaluated for use as an antimicrobial treatment applied to beef trimmings before grinding. Microbial reductions were less than 1 log but there was improved colour stability of ground beef (Pohlman *et al.*, 2002). Dickson *et al.* (1994) applied 8-12% TSP solutions at 55°C to artificially contaminated meat pieces and recorded reductions of *Salmonella* Typhimurium, *L. monocytogenes*, and *E. coli* O157:H7 ranging from 0.8–1.2 log units.

**Proponent/Supplier Information**

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**References**


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