



106 School Street, Suite 201 Spring Mills, PA 16875
Phone 814-422-0251 Fax 814-422-0255
pco@paorganic.org www.paorganic.org

Guidance for the use of Boiler Chemicals in Organic Processing

Boiler chemicals are commonly used in food processing facilities to protect steam generating pipes and equipment from corrosion. PCO must review all boiler chemicals used in the production of organic products. Proper maintenance of boiler is required and maintenance records must be available at inspection.

I. Steam with No Food Contact

In boiler systems where there is no contact between the steam and the organic food product, (i.e. steam only used for heating product in sealed containers or a closed boiler system) any substance may be used.

Boiler chemicals that are used in systems where the steam does not have food contact must still be reviewed by PCO.

II. Steam with Food Contact

In boiler systems where there is direct contact or potential for contact between the steam and the organic product, or the steam is a part of processing the organic product, only materials specifically allowed on the National List at §205.605 or non-volatile materials that do not carryover into the steam are allowed. Operators must have documentation available on-site to show that non-volatile materials do not carryover into the steam. Morpholine is specifically prohibited for use in food contact due to concerns about potential carcinogenicity.

A. Materials allowed on the National List at §205.605

- ascorbic acid
- citric acid
- potassium carbonate
- potassium hydroxide
- sodium bicarbonate
- sodium carbonate (soda ash)
- sodium hydroxide (caustic soda)

Boiler products containing materials allowed on the National List at §205.605 must be reviewed by PCO, and are identified on the PCO Materials List with the following annotation:
Steam is allowed in direct food contact.

B. Non-volatile materials that will not carryover into the steam

Oxygen scavenging compounds that react with free oxygen and precipitate out of the boiler water are considered materials that do not carryover into the steam. Allowed oxygen scavengers include:

- sodium sulfite
- ethylenediaminetetraacetic acid (EDTA)
- nitriloacetic acid (NTA)

Boiler products containing non-volatile materials must be reviewed by PCO, and are identified on the PCO Materials List with the following restriction:

(R) See non-volatile boiler chemical restriction: Steam is allowed in direct food contact if documented that material does not carryover into steam.

Volatile materials not on the National List are prohibited from direct food contact. Steps must be taken to prevent carryover into the steam, and may include:

- “Blow down” or the removal of concentrated boiler water and solid residues from a boiler system before organic production so that steam is generated from fresh water without additives
- Turning off the injection system for volatile treatment chemicals prior to the organic run
- Purging the system with product then marketing the purged product as conventional

III. Steam for Package Sterilization (Indirect Food Contact)

The following materials are only allowed for use as indirect food contact substances for package sterilization as listed on the National List at §205.605:

- cyclohexylamine
- diethylaminoethanol (DEAE)
- octadecylamine

Boiler products containing chemicals listed above must be reviewed by PCO, and are identified on the PCO Materials List with the following restriction:

(R) Steam is only allowed for use for packaging sterilization.