



United States
Department of
Agriculture

Agricultural
Marketing
Service

Transportation
and
Marketing

P.O. Box 96456
Washington, DC
20090-6456

June 6, 2001

Mr. Michael Harvey
Enviro Tech
Post Office Box 577470
Modesto, California 95357

Dear Mr. Harvey:

Thank you for your petition of January 31, 2001, which proposes the addition of Peroxyacetic Acid to the National Organic Program's (NOP) National List of Allowed and Prohibited Substances (National List). The status of your petition is as marked below:

_____ Your petition has been accepted for review by the National Organic Standards Board (NOSB) and tentatively scheduled for consideration by the NOSB at its (date) meeting. No additional action on your part is needed at this time. You may monitor the status of your petition at the NOP website (www.ams.usda.gov/nop).

_____ Your petition is returned because the NOSB has determined that the petition is incomplete. Specifically, information is required for items () of the enclosed document titled "Information to be Included in a Petition."

X Your petition is returned because it requests the addition of a substance, **Peroxyacetic acid**, previously reviewed by the NOSB on November 17, 2000. At that time, the NOSB approved the substance for recommendation to the Secretary of Agriculture for inclusion on the National List.

_____ Your petition is returned because it requests action on a formulated product. Active ingredients and inert ingredients must be individually petitioned for addition to the National List.

If you have questions regarding this notification, please feel free to call me at (202) 690-3655.

Sincerely,

Robert Pooler, Agricultural Marketing Specialist
National Organic Program



The Agricultural Marketing Service
is an agency of the
United States Department of Agriculture



August 14, 2001

Enviro Tech Chemical Services, Inc.
Attn: Michael Harvey
P.O. Box 577470
Modesto, CA 95357

RE: BioSide™ HS 15% (Peroxyacetic Acid Solution)
Category Code: 3D
NSF Registration No. 122280

Dear Michael Harvey:

NSF has processed the application for Registration of **BioSide™ HS 15% (Peroxyacetic Acid Solution)** to the *NSF Registration Guidelines for Proprietary Substances and Nonfood Compounds (2000)*, which are available at www.nsf.org/usda. The NSF Nonfood Compounds Registration Program is a continuation of the USDA product approval and listing program, which is based on meeting regulatory requirements for appropriate use, ingredient review and labeling verification.

This product is acceptable for use in meat, poultry, and other food processing areas as a **Fruit and Vegetable Washing Product (3D)**, when used to wash fruits and vegetables that will become ingredients of meat, poultry, and rabbit products. After using the substance, the fruits and vegetables do not require a rinse with potable water. Such use requires following the respective label instructions, and shall utilize the minimum amount sufficient for the purpose.

This product is NSF Registered when the NSF Registration Number, Category Code, and Registration Mark appear on the NSF approved product label. The NSF Registration Mark can be downloaded from the NSF website, at http://www.nsf.org/mark/download_marks.html.

Registration of this compound by NSF International is in no way to be construed as an endorsement of the compounds, appropriate selection for use, or of any performance or efficacy claims made by the manufacturer.

Registration status may be verified at any time via the NSF website, at <http://www.nsf.org/usda>. Changes in formulation or label, without the prior written consent of NSF, will void registration, and will supersede the on-line listing.

Sincerely,

A handwritten signature in black ink that reads "Kenji Yano". The signature is written in a cursive, flowing style.

Kenji Yano, Ph.D.
NSF Nonfood Compounds Registration and Listing Program



May 24, 2001

Enviro Tech Chemical Services, Inc.
Attn: Michael Harvey
P.O. Box 577470
Modesto, CA 95357

RE: BioSide™ HS 5% (Peroxyacetic Acid Solution)
Category Code: D2
NSF Registration No. 122279

Dear Michael Harvey:

NSF has processed the application for Registration of **BioSide™ HS 5% (Peroxyacetic Acid Solution)** to the *NSF Registration Guidelines for Proprietary Substances and Nonfood Compounds (2000)*, which are available at www.nsf.org/usda. The NSF Nonfood Compounds Registration Program is a continuation of the USDA product approval and listing program, which is based on meeting regulatory requirements for appropriate use, ingredient review and labeling verification.

This product is acceptable as a sanitizer for all surfaces not always requiring a rinse (D2) in and around food processing areas. Before using this compound, food products and packaging materials must be removed from the room or carefully protected. A potable water rinse is not required following the use of this compound on previously cleaned hard surfaces provided that the surfaces are adequately drained before contact with food so that little or no residue remains which can adulterate or have a deleterious effect on edible products. A potable water rinse is required following use of this compound under conditions other than those stated above. The compound must always be used according to applicable label directions.

This product is NSF Registered when the NSF Registration Number, Category Code, and Registration Mark appear on the NSF approved product label. The NSF Registration Mark can be downloaded from the NSF website, at http://www.nsf.org/mark/download_marks.html.

Registration of this compound by NSF International is in no way to be construed as an endorsement of the compounds, appropriate selection for use, or of any performance or efficacy claims made by the manufacturer.

Registration status may be verified at any time via the NSF website, at <http://www.nsf.org/usda>. Changes in formulation or label, without the prior written consent of NSF, will void registration, and will supersede the on-line listing.

Sincerely,

A handwritten signature in cursive script that reads 'Kenji Yano'.

Kenji Yano, Ph.D.
NSF Nonfood Compounds Registration and Listing Program

Peracetic Acid

Processing

Identification

Chemical Name(s):
peroxyacetic acid, ethaneperoxic acid

CAS Number:
79-21-0

Other Names:
per acid, periacetic acid, PAA

Other Codes:
NIOSH Registry Number: SD8750000
TRI Chemical ID: 000079210
UN/ID Number: UN3105

Summary Recommendation

Synthetic / Non-Synthetic:	Allowed or Prohibited:	Suggested Annotation:
<i>Synthetic (consensus)</i>	<i>Allowed (consensus)</i>	Allowed only for direct food contact for use in wash water. Allowed as a sanitizer on surfaces in contact with organic food. <i>(consensus)</i> From hydrogen peroxide and fermented acetic acid sources only. <i>(Not discussed by processing reviewers—see discussion of source under Crops PAA TAP review.)</i>

Characterization

Composition:

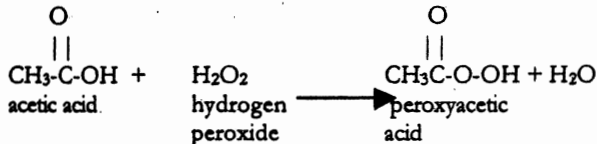
$C_2H_4O_3$. Peracetic acid is a mixture of acetic acid (CH_3COOH) and hydrogen peroxide (H_2O_2) in an aqueous solution. Acetic acid is the principle component of vinegar. Hydrogen peroxide has been previously recommended by the NOSB for the National List in processing (synthetic; allowed at Austin, 1995).

Properties:

It is a very strong oxidizing agent and has stronger oxidation potential than chlorine or chlorine dioxide. Liquid, clear, and colorless with no foaming capability. It has a strong pungent acetic acid odor, and the pH is acid (2.8). Specific gravity is 1.114 and weighs 9.28 pounds per gallon. Stable upon transport.

How Made:

Peracetic acid (PAA) is produced by reacting acetic acid and hydrogen peroxide. The reaction is allowed to continue for up to ten days in order to achieve high yields of product according to the following equation.



Due to reaction limitations, PAA generation can be up to 15% with residual levels of hydrogen peroxide (up to 25%) and acetic acid (up to 35%) with water up to 25%. Additional methods of preparation involve the oxidation of acetaldehyde or alternatively as an end product of the reaction of acetic anhydride, hydrogen peroxide, and sulfuric acid.

Additional methods of preparation involve the oxidation of acetaldehyde (Budavari, 1996). Another method involves the reaction of tetraacetylenediamine (TAED) in the presence of an alkaline hydrogen peroxide solution (Davies and Deary, 1991). These sources appear to be used more frequently in pulp, paper, and textile manufacture (Pan, Spencer, and Leary, 1999).

Specific Uses:

Peracetic acid's primary use in food processing and handling is as a sanitizer for food contact surfaces and as a disinfectant for fruits, vegetables, meat, and eggs (Evans, 2000). PAA can also be used to disinfect recirculated flume water (Lokkesmoe and Olson, 1993). Other uses of PAA include removing deposits, suppressing odor, and stripping biofilms from food contact surfaces (Block, 1991; Mosteller and Bishop, 1993; Marriot, 1999; Fatemi and Frank 1999). It is also

used to modify food starch by mild oxidation and is used as a bleach (Food Chemicals Codex, 1996).

Action:

The primary mode of action is oxidation. PAA disinfects by oxidizing of the outer cell membrane of vegetative bacterial cells, endospores, yeast, and mold spores. The mechanism of oxidation is the transfer of electrons, therefore the stronger the oxidizer, the faster electrons are transferred to the microorganism and the faster the microorganism is inactivated or killed.

Sanitizer	eV*
Ozone	2.07
Peracetic Acid	1.81
Chlorine dioxide	1.57
Sodium hypochlorite (chlorine bleach)	1.36
*electron-Volts	

Therefore PAA has a higher oxidation potential than chlorine sanitizers but less than ozone.

PAA also inactivates enzymes that are responsible for discoloration and degradation, such as peroxidase in the browning of potatoes (Greenspan and Margulies, 1950).

Combinations:

Peracetic acid usually occurs with hydrogen peroxide and acetic acid in an aqueous solution. Stock commercial preparations usually contain a synthetic stabilizer such as 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP) or 2,6-pyridinedicarboxylic (dipicolinic) acid to slow the rate of oxidation or decomposition (Kurschner and Diken, 1997). According to FDA regulations, HEDP may be used with PAA at a level not to exceed 4.8 ppm in water used to wash fresh fruits and vegetables (21 CFR 173.315(a)(5)).

Sanitizing combinations approved by 21CFR 178.1010 to be used with PAA under (b)(38) include: hydrogen peroxide; acetic acid; sulfuric acid; and 2,6-pyridinedicarboxylic (dipicolinic) acid. Under (b)(45) they include: hydrogen peroxide; acetic acid; octanoic acid; peroxyoctanoic acid; sodium 1-octanesulfonate; and 1-hydroxyethylidene-1,1-diphosphonic acid.

These stabilizers, surfactants, and synergists are not evaluated in this TAP review. Some are specifically mentioned in the context of the OFPA criteria.

Status

OFPA 7 USC 6517(b)(1)(C)(i) is listed as an equipment cleaner.

Regulatory

FDA approved it for direct food contact for use in wash water or to assist in the peeling of fruits and vegetables (21CFR 173.315). Also approved as sanitizer on food contact surfaces (21 CFR 178.1010). Registered as an EPA Section 3 pesticide (40 CFR 152.25(a)--regular registration).

Status among U.S. Certifiers

Variable. Most allow it with a fresh water rinse. Some may require continuous testing of rinse water by on-line meter. Some may allow direct food contact use at present, but many will not allow for direct food contact unless the NOSB recommends that it be included on the National List.

Historic Use

Peracetic acid was patented in 1950 to treat fruits and vegetables to reduce spoilage from bacteria and fungi destined for processing (Greenspan and Margulies, 1950). It has since been used in systems to disinfect recirculated wash water used to handle fresh produce (Lokkesmoe and Olson, 1995). Research as an alternative to chlorine and irradiation as a disinfectant for meat and poultry is relatively recent.

International

Does not appear on the IFOAM Basic Standards Appendix IV or EU 2092/91 Annex VI. It is not clear if those standards require that disinfectants need to appear; these lists are "positive" lists.