

Attachment #18: Environmental Assessment

Environmental Assessment

1. **Date:** January 16, 2017
2. **Submitter:** Enviro Tech Chemical Services, Inc.
3. **Address:** 500 Winmoore Way, Modesto, CA. 95358
4. **Description of Proposed Action:**
 - a. Description of the Requested Action: The food contact substance (FCS) proposed in the Food Contact Notification is an aqueous solution composed of peroxyacetic acid (PAA), hydrogen peroxide (H₂O₂), acetic acid, 1-hydroxy ethylidene-1,1-diphosphonic acid (HEDP) and optionally sulfuric acid. The FCS will be used in food processing facilities as an antimicrobial agent in:
 - i. process water or ice used for washing, rinsing or cooling whole or cut meat, including hides, carcasses, parts, trim and organs at concentrations up to 1200 ppm PAA, 275 ppm H₂O₂ and 33 ppm HEDP;
 - ii. process water or ice used for washing or chilling fruits and vegetables that are raw agricultural commodities and fruits and vegetables that are not raw agricultural commodities (further processed) in food processing facilities at concentrations up to 500 ppm PAA, 115 ppm H₂O₂ and 14 ppm HEDP.
 - b. The Need for the Action: The FCS is intended to be used as an antimicrobial agent to reduce or eliminate pathogenic microorganisms on whole or cut meat, including hides, carcasses, parts, trim and organs as well as on fruits and vegetables that are raw agricultural commodities and fruits and vegetables that are not raw agricultural commodities (further processed). The maximum concentration of the diluted FCS solution at meat processing plants is 1200 ppm PAA, 275 ppm H₂O₂ and 33 ppm

HEDP. The proposed maximum concentration of the FCS will allow meat processing plants greater flexibility to enhance processing techniques (i.e. more flexibility in terms of contact time, concentration, spray vs. immersion, etc.) in order to improve microbial efficacy against pathogenic microorganisms. The action requested by this FCN addresses current and future needs for processors and governmental agencies to respond to increased pressures to improve food safety.

For fruit and vegetable processing, the higher proposed maximum FCS concentration of 500 ppm PAA, 115 ppm H₂O₂ and 14 ppm HEDP will help to reduce or eliminate pathogenic microorganisms as well as yeast and mold organisms that are typically more difficult to reduce or eliminate. Fruit and vegetable processors are increasingly challenged to achieve desired pathogen reductions in the presence of faster processing speeds, lower FCS concentrations and shorter contact times. For these reasons, Enviro Tech is seeking a new FCN that would increase the FCS concentration limit for fruit and vegetable processing to improve food safety.

- c. Brief Discussion of the Use and Disposal of the FCS: The FCS is intended for use in (1) process water or ice used for washing, rinsing or cooling whole or cut meat, including hides, carcasses, parts, trim and organs and (2) process water or ice used for washing or chilling fruits and vegetables that are raw agricultural commodities and fruits and vegetables that are not raw agricultural commodities (further processed) in food processing plants throughout the United States.

After use, the diluted FCS solution will be disposed of with processing plant wastewater according to National Pollutant Discharge Elimination System (NPDES) regulations. For processing plants that hold a NPDES permit (i.e., direct dischargers), the FCS-containing wastewater will be treated on-site before direct discharge to surface waters. For processing plants without such NPDES permits (i.e., indirect dischargers), the FCS

containing wastewater would travel through the sanitary sewer system into Publicly Owned Treatment Works (POTWs) for standard wastewater treatment processes before movement into aquatic environments.

The potential use and disposal of the FCS is discussed further below and describes worst case scenarios and associated potential risks along with the EIC and EEC calculations.

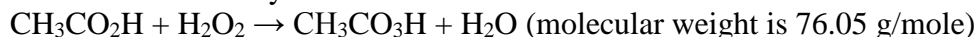
5. Identification of Substance:

The FCS is a liquid equilibrium mixture of peroxyacetic acid, hydrogen peroxide and acetic acid. It is made by blending acetic acid, hydrogen peroxide, HEDP (as a chelating agent), optionally sulfuric acid (to speed the reaction process) and reverse osmosis purified water.

Ingredients:

Chemical Name	CAS#
Peroxyacetic acid	79-21-0
Hydrogen peroxide	7722-84-1
Acetic acid	64-19-7
Sulfuric acid (optional)	7664-93-9
HEDP (1-hydroxyethylidene-1,1-diphosphonic acid)	2809-21-4
Water	7732-18-5

The basic reaction by the above combination is as follows:



6. Introduction of Substance into the Environment:

a. Introduction of substances into the environment as a result of manufacture:

The FCS is currently manufactured in EPA approved facilities at the addresses listed below and no unusual or factual threat to the environment exist.

Establishment Number	Establishment Name	Establishment Site Address
63838-CA-01	Enviro Tech Chemical Services, Inc.	500 Winmoore Way, Modesto CA
63838-AR-01	Enviro Tech Chemical Services – Plant 6	724 Phillips County Road 411, Helena, AR 72342

Attached are the Facility Registry Service (FRS) website pages that document the EPA Establishment Numbers at the addresses listed above. Below are the website links:

http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110024498890 and

http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110063867383. No extraordinary environmental circumstances would apply to the continued on-going manufacture of the FCS.

b. Introduction of substances into the environment as a result of use/disposal:

The FCS is proposed for use as an antimicrobial agent for: (1) process water or ice used for washing, rinsing or cooling whole or cut meat, including hides, carcasses, parts, trim and organs or (2) process water or ice used for washing or chilling fruits and vegetables that are raw agricultural commodities and fruits and vegetables that are not raw agricultural commodities (further processed) at processing plants throughout the United States. The FCS is provided as a concentrate that is diluted on site. The maximum concentrations of the FCS by use are as follows:

Use	PAA	H202	HEDP
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Process water or ice used for washing, rinsing or cooling whole or cut meat, including hides, carcasses, parts, trim and organs	1200	275	33
Process water or ice used for washing or chilling fruits and vegetables that are raw agricultural commodities and fruits and vegetables that are not raw agricultural commodities (further processed)	500	115	14

Based on the described use patterns above, the primary pathway for the FCS to reach the environment is by the use and disposal of the FCS. Following use or disposal of the FCS, the FCS enters the processor's on-site pretreatment facility before discharging to the local publicly-owned treatment works (POTW) and surface waters, depending upon whether the facility has an individual NPDES permit.

Treatment of the process water at an on-site waste water treatment facility and then at a POTW and surface waters is expected to result in a complete degradation of PAA, hydrogen peroxide and acetic acid. The PAA will breakdown into oxygen and acetic acid while hydrogen peroxide will breakdown into oxygen and water⁽¹⁾. PAA, hydrogen peroxide and acetic acid all rapidly degrade on contact with organic matter, transition metals and upon exposure to sunlight. The half-life of PAA in buffered solutions was 63 hours at pH 7 for a 748 ppm solution, and 48 hours at pH 7 for a 95 ppm solution⁽²⁾. The half-life of hydrogen peroxide in natural river water ranged from 2.5 days when initial concentrations were 10,000 ppm and increased to 15.2 days when the concentration decreased to 250 ppm⁽³⁾.

Biodegradation is the most significant removal mechanism for acetic acid. In biodegradation studies with acetic acid, 99% degraded in 7 days under anaerobic conditions⁽⁴⁾. Acetic acid is not expected to concentrate in the wastewater discharged to the POTW and surface waters. Therefore, these substances are not

expected to be introduced into the environment to any significant extent as a result of the proposed use of the FCS.

Sulfuric acid is an optional ingredient in the FCS formulation and is used to catalyze the reaction between acetic acid and hydrogen peroxide to more rapidly produce a stable PAA solution. Sulfuric acid is GRAS for use in or on food as listed under Title 21 C.F.R. § 184.1095. Sodium sulfate is an inorganic salt with a melting point of approximately 884 °C., a relative density of 2.7 g/cm³ at 20°C and a water solubility of 161 g/l at 20°C ⁽¹⁰⁾. Sulfuric acid is a strong mineral acid that dissociates readily in water to sulfate ions and hydrated protons and is totally miscible with water ⁽¹¹⁾. With a pKa of 1.92 at 25C, the dissociation of sulfuric acid is 99% at pH 3.92 for example. At environmentally relevant concentrations, sulfuric acid is practically totally dissociated. In water, sodium sulfate completely dissociates into sodium and sulfate ions. Total ionization of sulfuric acid implies that sulfuric acid, itself, will not adsorb on particulate matters or surfaces and will not accumulate in living tissues.

In anaerobic conditions, sulfate is biologically reduced to hydrogen sulfide by sulfate reducing bacteria or incorporated into living organisms and included in the sulfur cycle. Sodium sulfate is not reactive in aqueous solution at room temperature. Sodium sulfate will completely dissolve, ionise and distribute across the entire planetary "aquasphere"⁽¹⁰⁾. Some sulfates may eventually be deposited, but the majority of sulfates participate in the sulfur cycle in which natural and industrial sodium sulfate is not distinguishable. Sodium sulfate is widely distributed in nature; it occurs as mineral salts (e.g. thenardite, mirabilite), it is present in almost all fresh and salt waters, and sulfate as such is normally present in almost all natural foodstuffs. Both sodium and sulfate ions are among the most common ions found in all living organisms. In mammals, sulfate is a normal metabolite of sulfur-containing amino-acids, it is normally incorporated in a variety of body compounds and it plays an important role in detoxification/ excretion processes due to sulfoconjugation. Sodium sulfate is a substance with a

favorable ecological profile. Due to the low aquatic toxicity and the natural recycling that occurs in the sulfur cycle, wide dispersive use of sodium sulfate does not present a major hazard to the environment ⁽¹⁰⁾.

The substances discussed above (PAA, hydrogen peroxide, acetic acid and the optional ingredient sulfuric acid) are not expected to be introduced into the environment to any significant extent as a result of the proposed use of the FCS. The remainder of this section will therefore consider only the environmental introduction of HEDP.

The Environmental Introduction Concentration (EIC) may be calculated by multiplying the concentration of HEDP in the FCS by the estimated percentage of degradation associated with use of the FCS in (1) process water or ice used for washing, rinsing or cooling whole or cut meat, including hides, carcasses, parts, trim and organs or (2) process water or ice used for washing or chilling fruits and vegetables that are raw agricultural commodities and fruits and vegetables that are not raw agricultural commodities (further processed) in food processing facilities. HEDP has a much longer half-life than either PAA or H₂O₂, therefore, it is assumed that 100% remains in the FCS. The maximum concentration of HEDP that may be expected in a worst case scenario is the following:

Use	HEDP EIC
Process water or ice used for washing, rinsing or cooling whole or cut meat, including hides, carcasses, parts, trim and organs	33
Process water or ice used for washing or chilling fruits and vegetables that are raw agricultural commodities and fruits and vegetables that are not raw agricultural commodities (further processed)	14

The Human and Environmental Risk Assessment Project (HERA) report showed that HEDP adsorption to wastewater sludge is greater than 90%⁽⁷⁾. To be conservative, an estimate of 80% adsorption to wastewater sludge in sewage treatment plants will be used for the below Estimated Environmental Concentration (EEC) calculations.

The EIC of HEDP is based on use or disposal of the FCS into the meat or fruit and vegetable processor's on-site pre-treatment facility. The subsequent EECs including EEC_{sludge} and EEC_{water} are calculated below using the 80:20 partition factor arrived at in the HERA report. With respect to the EEC_{water} calculation, a 10 fold dilution factor is recommended for use when estimating surface water concentrations⁽⁶⁾. Below are the worst-case EIC and EEC_{sludge} and EEC_{water} calculations for HEDP under each proposed application of the FCS:

Process water or ice used for washing, rinsing or cooling whole or cut meat, including hides, carcasses, parts, trim and organs:

$$\text{HEDP EIC} = 33 \text{ ppm HEDP} \times 100\% \text{ remaining} = 33 \text{ ppm HEDP}$$

$$\text{HEDP EEC}_{\text{sludge}} = 33 \text{ ppm HEDP} \times 80\% \text{ partition to sludge} = 26.4 \text{ ppm HEDP}$$
$$\text{EEC}_{\text{sludge}}$$

$$\text{HEDP EEC}_{\text{water}} = (33 \text{ ppm HEDP} \times 20\% \text{ partition to water}) / 10 \text{ fold dilution factor} = 0.66 \text{ ppm HEDP EEC}_{\text{water}}$$

Process water or ice used for washing or chilling fruits and vegetables that are raw agricultural commodities and fruits and vegetables that are not raw agricultural commodities (further processed):

$$\text{HEDP EIC} = 14 \text{ ppm HEDP} \times 100\% \text{ remaining} = 14 \text{ ppm HEDP}$$

$$\text{HEDP EEC}_{\text{sludge}} = 14 \text{ ppm HEDP} \times 80\% \text{ partition to sludge} = 11.2 \text{ ppm HEDP}$$
$$\text{EEC}_{\text{sludge}}$$

$$\text{HEDP EEC}_{\text{water}} = (14 \text{ ppm HEDP} \times 20\% \text{ partition to water}) / 10 \text{ fold dilution factor} = 0.28 \text{ ppm HEDP EEC}_{\text{water}}$$

7. Fate of the Substance in the Environment:

It is well documented and accepted in the scientific community that PAA and H₂O₂ are short lived in the environment, do not bioaccumulate, have innocuous degradation byproducts, and are of no toxicological or ecotoxicity concern^(1, 2, 3). Peroxyacetic acid and hydrogen peroxide are not expected to survive treatment at the primary wastewater treatment facility due to their reactivity and pH sensitivity⁽¹⁾. Both compounds are rapidly degraded on contact with organic matter, transition metals, and upon exposure to sunlight^(2, 3). The half-life of PAA in buffered solution solutions was 63 hrs at pH 7 for a 748 ppm solution, and 48 hrs for a 95 ppm solution, also at pH 7⁽²⁾.

The half-life of hydrogen peroxide in natural river water ranged from 2.5 days when initial concentrations were 10,000 ppm, and increased to 15.2 days when the concentration decreased to 250 ppm⁽³⁾. In filtered lake water the half-life of H₂O₂ (initial concentration 3.4 ug/l) was 8.6 hrs-31 hrs. (page 21 reference #3).

Since PAA and H₂O₂ rapidly degrade, they will not be introduced into the natural environment in wastewater at toxic levels. Therefore toxicity and fate data should not be required for these compounds. Biodegradation is the most significant removal mechanism for acetic acid. In biodegradation studies with acetic acid, 99% degraded in 7 days under anaerobic conditions⁽⁴⁾.

When wastewater from food processing operations described above is released to a POTW and surface waters, the concentration of HEDP will be further diluted by the additional waters processed by the POTW and surface waters. The maximum HEDP EEC_{water} for process water or ice used for washing, rinsing, storing or cooling whole or cut meat, including hides, carcasses, parts, trim and organs will be 0.66 ppm and the maximum HEDP EEC_{sludge} will be 26.4 ppm based on the above calculations using the 10 fold dilution factor for the EEC_{water} and the 80:20 partition ratio to wastewater sludge and wastewater, respectively. The maximum HEDP EEC_{water} for process water or ice used for washing or chilling fruits and vegetables that are raw agricultural commodities and fruits and vegetables that are not raw agricultural commodities (further processed) in food processing facilities will be 0.28 ppm and the maximum HEDP EEC_{sludge} will be

11.2 ppm based on the above calculations using the 10 fold dilution factor for the EECwater and the 80:20 partition ratio to wastewater sludge and wastewater, respectively. The chelating agent, HEDP, is added to the FCS to sequester transition metal ions in solution. HEDP increases shelf life of the product significantly by preventing metal ions from breaking down PAA and H₂O₂. HEDP is in a class of compounds known as a phosphonates. HEDP slowly biodegrades into phosphates at a rate of about 1% per day when chelated with transition metal ions⁽⁵⁾. Because of the nature of the carbon-phosphorus bond in HEDP, it adsorbs very strongly to mineral surfaces and rarely exists free in solution⁽⁵⁾. The HERA report shows that HEDP adsorption to sludge is greater than 90%⁽⁷⁾. Our calculations used a conservative estimate of 80% adsorption to sludge in sewage treatment plants.

In wastewater, sulfuric acid will completely dissociate into sulfate ions and hydrated protons, neither of which are a toxicological or environmental concern^(10, 11).

8. Environmental Effects of Released Substances:

This FCS is intended for microbiological control in (1) process water or ice used for washing, rinsing, storing or cooling whole or cut meat, including hides, carcasses, parts, trim and organs and (2) process water or ice used for washing or chilling fruits and vegetables that are raw agricultural commodities and fruits and vegetables that are not raw agricultural commodities (further processed) in food processing facilities. The concentrations of the proposed FCS in each application are quite diluted, and once the FCS contacts the balance of the site's wastewater, and subsequently further downstream with the main body of discharge/waste water at the POTW and surface waters, the pH would be such that the peroxygens, PAA and H₂O₂, would degrade rapidly^(1,2,3).

a. Aquatic Environment

HEDP is a strong chelating agent and can result in adverse effects on environmental organisms by complexation of essential nutrients⁽⁷⁾. For strong chelating agents, it is suggested that two types of No Observed Effect Concentration's (NOEC's) be determined: an intrinsic NOEC (NOEC_i) measured with excess nutrients available and an NOEC measured to protect from the chelating effects in natural waters (NOEC_c)⁽⁹⁾. A

realistic NOECs should be determined by testing in natural waters, by predicting metal speciation and algal trace element requirements, and/or using metal speciation modeling programs⁽⁹⁾. However, excess nutrients are expected to be present in industrial wastewater as eutrophication is a well-known phenomenon seen in industrial wastewaters from food processing facilities⁽⁸⁾.

Aquatic toxicity of HEDP is summarized and shown in the following table below.

Table 1: Environmental Toxicity Data for HEDP		
Species	Endpoint	mg/L
Short Term		
<i>Lepomis macrochirus</i> ⁹	96 hr LC ₅₀	868
<i>Oncorhynchus mykiss</i> ⁹	96 hr LC ₅₀	360
<i>Cyprindon variegates</i> ⁹	96 hr LC ₅₀	2180
<i>Ictalurus punctatus</i> ⁹	96 hr LC ₅₀	695
<i>Leciscus idus melanatus</i> ⁹	96 hr LC ₅₀	207 - 350
<i>Daphnia magna</i> ⁹	24 – 48 hr LC ₅₀	165 - 500
<i>Planemonetes pugio</i> ⁹	96 hr EC ₅₀	1770
<i>Crassostrea virginica</i> ⁹	96 hr EC ₅₀	89
<i>Selenastrum capricornutum</i> ⁷	96 hr LC ₅₀	3
<i>Selenastrum capricornutum</i> ⁷	96 hr NOEC	1.3
Algae ⁷	96 hr EC ₅₀	0.74
<i>Chlorella vulgaris</i> ⁹	48 hr NOEC	≥100
<i>Pseudomonas putida</i> ⁹	30 minute NOEC	1000
Long Term		
<i>Oncorhynchus mykiss</i> ⁹	14 day NOEC	60 - 80
<i>Daphnia Magna</i> ⁹	28 day NOEC	10 - <12.5
Algae ⁷	14 day NOEC	13

Jaworska *et. al.* showed that the acute toxicity endpoints for HEDP ranged from 0.74 – 2,180 mg/L while the chronic NOECs ranged from 60-80 mg/L for the 14 day NOEC for *Oncorhynchus mykiss* and the 28 day NOEC for *Daphnia Magna* was 10 mg/L.

Although a chronic NOEC of 0.1 mg/L was reported for reproductive effects in *Daphnia Magna*, it is inconsistent with other toxicity data and Jaworska *et. al.* The relevant endpoint for a high orthophosphate environment is 10mg/L (28 day) NOEC for *Daphnia magna* as published by Jaworska et al. The values calculated herein of HEDP EEC_{water} = 0.66 ppm for process water or ice used for washing, rinsing, storing or cooling whole or

cut meat, including hides, carcasses, parts, trim and organs fall far below these limits so no significant adverse impacts are expected. The values calculated herein of HEDP $EEC_{\text{water}} = 0.28$ ppm for process water or ice used for washing or chilling fruits and vegetables that are raw agricultural commodities and fruits and vegetables that are not raw agricultural commodities (further processed) in food processing facilities also fall far below these limits so no significant adverse impacts are expected.

b. Terrestrial Environment

HEDP accumulated in wastewater sludge is eventually discharged to land and is not expected to have any adverse environmental impact on the terrestrial toxicity endpoints for plants, earthworms or birds. The NOEC for soil-dwelling organisms was 1000 mg/kg soil dry weight for red worms in soil⁽⁷⁾. The 14 day median lethal dose (LD_{50}) for birds was greater than 284 mg/kg body weight⁽⁷⁾. As a comparison, the HEDP EEC_{sludge} is 26.4 ppm for process water or ice used for washing, rinsing, storing or cooling whole or cut meat, including hides, carcasses, parts, trim and organs which is far less than the LD_{50} for birds at 248ppm so no significant adverse impacts are expected. Also, the HEDP EEC_{sludge} is 11.2 ppm for process water or ice used for washing or chilling fruits and vegetables that are raw agricultural commodities and fruits and vegetables that are not raw agricultural commodities (further processed) in food processing facilities which is also far less than the LD_{50} for birds at 248ppm so no significant adverse impacts are expected.

9. Use of Resources and Energy:

The proposed FCS would not pose any significant additional burden on existing resources or energy in the manufacture, transport, use or disposal of the FCS above and beyond those already existing, and the proposed use will not create any significant additional burden on resources or energy. The FCS is made in a PAA manufacturing facility with existing fixed costs that would not be increased in a significant way by the manufacture of this FCS. The ingredients used in the manufacture of the FCS are purchased in bulk quantities for several products and this FCS would not pose a significant additional

burden on those requirements. The transportation of the FCS is similar to other PAA products at the facility and would only increase the cost of transportation by the weight and incremental fuel required for transport. The disposal of the FCS would not significantly increase any wastewater usage or processing costs any more than a similar volume of a product.

10. Mitigation Measures:

The proposed FCS is not reasonably expected to result in any adverse environmental impacts that would require mitigation measures of any kind.

11. Alternatives to Proposed Action:

There are no potential adverse environmental effects that would necessitate alternative actions to that proposed in this FCN. The alternative of not approving the action proposed herein would simply result in the continued use of the materials that the FCS would otherwise replace and such action would have no environmental impact.

12. List of Preparers:

- a. Michael Harvey, BS. Cal. State University, Chico (Chemistry), 30 years of experience conducting ecological risk assessments and preparing regulatory submissions that have been submitted to the EPA and FDA
- b. Brent Bankosky, BS., MBA, Pennsylvania State University, MS, Lehigh University, 12 years of experience preparing EPA and FDA regulatory submissions
- c. Jonathan N. Howarth, Ph.D., Physical Chemistry, Univ. of Southampton, England; BS (Honors), Applied Chemistry, Leicester Polytechnic, England, 25 years of experience preparing EPA and FDA regulatory submissions
- d. Joseph Donabed, BS, Cal. State Stanislaus University, 3 years of experience preparing EPA and FDA regulatory submissions
- e. Tina Rodrigues, BS, Cal. State Stanislaus University, 8 years of experience preparing EPA and FDA regulatory submissions

13. Certification:

The undersigned official certifies that the information presented is true, accurate, and complete to the best of the knowledge of Enviro Tech Chemical Services, Inc.

Date: January 16, 2017


Signature: Name and Title: Michael S. Harvey, President



14. BIBLIOGRAPHY and LITERATURE CITATIONS

- (1) EPA: Reregistration eligibility Decision: Peroxy compounds; EPA Case 4072. Doc #738-F-93-026; Dec. 1993.
- (2) ECETOC: European Centre for Ecotoxicology and Toxicology of Chemicals, JACC No. 40, "Peracetic Acid and its Equilibrium Solutions"; January 2001
- (3) ECETOC: European Centre for Ecotoxicology and Toxicology of Chemicals, JACC No. 22, "Hydrogen Peroxide"; January 1993
- (4) U.S. High Production Volume (HPV) Chemical Challenge Program: "Assessment Plan for Carboxylic Food Acids and Salts Category." Acetic Acid and Salts Panel, American Chemistry Council, June 28, 2001
- (5) NOWACK, B. (2003) "Environmental chemistry of phosphonates"; Water Research, 1-14.
- (6) Rapaport, Robert A., 1988. Prediction of consumer product chemical concentrations as a function of publically owned treatment works treatment type and riverine dilution. Environmental Toxicology and Chemistry 7(2), 107-115. Found online at: <http://onlinelibrary.wiley.com/doi/10.1002/etc.5620070204/abstract>
- (7) HERA – Human & Environment Risk Assessment on Ingredients of European Household Cleaning Products: Phosphonates. 06/09/2004. www.heraproject.com – Phosphonates.
- (8) US EPA. Fact Sheet: Ecoregional Nutrient Criteria EPA-822-F-02-008, <http://www.epa.gov/waterscience/criteria/nutrient/ecoregions/jan03frnfs.pdf>
- (9) Jaworska, J.; Van Genderen-Takken, H.; Hanstveit, A.; van de Plassche, E.; Feijtel, T. Environmental risk assessment of phosphonates, used in domestic industry and cleaning agents in the Netherlands. Chemosphere 2002, 47, 655-665. Chemosphere. 2002, 47 655-665.
- (10) Human and Environmental Risk Assessment (HERA) on ingredients of Household Cleaning Products, Sodium Sulfate, January 2006. http://www.heraproject.com/files/39-F-06_Sodium_Sulfate_Human_and_Environmental_Risk_Assessment_V2.pdf
- (11) The Organisation for Economic Co-operation and Development (OECD) SIDS Voluntary Testing Program for International High Production Volume Chemicals (OECD SIDS), Sulfuric Acid, 2001. <http://webnet.oecd.org/HPV/UI/handler.axd?id=248f397d-64b3-4e14-8be9-473974e8dfdb>

EPA FRS Facility Detail Report Exhibit




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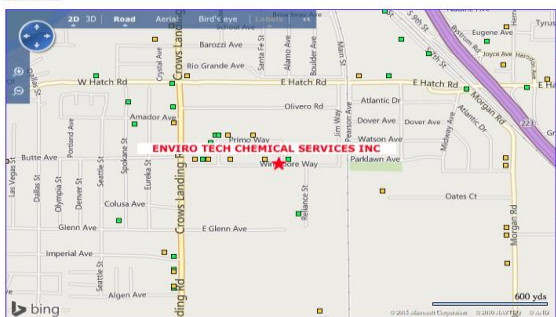
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FRS Facility Detail Report

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ENVIRO TECH CHEMICAL SERVICES INC
 500 WINMOORE WAY
 MODESTO, CA 95358
 EPA Registry Id: 110024498890



Legend

- ★ Selected Facility
- EPA Facility of Interest
- State/Tribe Facility of Interest

The facility locations displayed come from the FRS Spatial Coordinates tables. They are the best representative locations for the displayed facilities based on the accuracy of the collection method and quality assurance checks performed against each location. The North American Datum of 1983 is used to display all coordinates.

Facility Registry Service Links

- Search
- FRS Facility Query
- FRS EZ Search
- Organization Search
- FRS Physical Data Model
- FRS Geospatial Model
- Contact Us
- Facility Registry Service (FRS) Home

Report Error

Environmental Interests

Information System	System Facility Name	Information System Id/Report Link	Environmental Interest Type	Data Source	Last Updated Date	Supplemental Environmental Interests
TOXIC RELEASE INVENTORY SYSTEM	ENVIRO TECH CHEMICAL SERVICES INC	95357NVRTCS00W1	TRI REPORTER	TRI REPORTING FORM	04/16/2014	
INTEGRATED COMPLIANCE INFORMATION SYSTEM	ENVIRO TECH CHEMICAL SERVICES INC	2600013093	FORMAL ENFORCEMENT ACTION	ICIS	06/20/2011	ICIS-09-2011-4078 FORMAL ENFORCEMENT ACTION
CA-CALIFORNIA ENVIRONMENTAL REPORTING SYSTEM	ENVIRO TECH CHEMICAL SERVICES INC	10179035	STATE MASTER	CA-CERS		CERS2-10179035-10 RMP REPORTER CERS2-10179035-02 EPCKA
INTEGRATED COMPLIANCE INFORMATION SYSTEM	ENVIRO TECH CHEMICAL SERVICES, INC.	2200007711	ENFORCEMENT/COMPLIANCE ACTIVITY	ICIS	09/28/2010	
INTEGRATED COMPLIANCE INFORMATION SYSTEM	ENVIRO TECH CHEMICAL SERVICES, INC.	7424297	ENFORCEMENT/COMPLIANCE ACTIVITY	ICIS	05/23/2005	
SECTION SEVEN TRACKING SYSTEM	ENVIRO TECH CHEM SVC, INC.	063838CA001	PESTICIDE PRODUCER	SSTS	10/11/2006	
INTEGRATED COMPLIANCE INFORMATION SYSTEM	ENVIRO TECH CHEMICAL SERVICES INC	2200007285	FORMAL ENFORCEMENT ACTION	ICIS	09/27/2010	ICIS-09-2010-4058 FORMAL ENFORCEMENT ACTION

Additional EPA Reports: MyEnvironment Enforcement and Compliance Site Demographics Facility Coordinates Viewer Environmental Justice Map Viewer Watershed Report

Standard Industrial Classification Codes (SIC)

Data Source	SIC Code	Description	Primary
CA-CERS	0000		

Facility Codes and Flags

EPA Region:	09
Duns Number:	
Congressional District Number:	10
Legislative District Number:	
HUC Code/Watershed:	18040002 / MIDDLE SAN JOAQUIN-LOWER MERCED-LOWER STANISLAUS
US Mexico Border Indicator:	NO
Federal Facility:	NO
Tribal Land:	NO

Alternative Names

Alternative Name	Source of Data
ENVIRO TECH CHEMICAL SERVICES INC	CA-CERS
ENVIRO TECH.	TRIS
ENVIRO TECH CHEM SVC, INC.	SSTS
AMCOR MFC INC	SSTS

Organizations

Affiliation Type	Name	DUNS Number	Information System	Mailing Address
OWNER/OPERATOR		805860483	TRIS	
OWNER	ENVIRO TECH CHEMICAL SVC, INC.		SSTS	View

National Industry Classification System Codes (NAICS)

Data Source	NAICS Code	Description	Primary
TRIS	325998	ALL OTHER MISCELLANEOUS CHEMICAL PRODUCT AND PREPARATION MANUFACTURING.	

Facility Mailing Addresses

Affiliation Type	Delivery Point	City	State	Postal Code	Information System
FACILITY MAILING ADDRESS	500 WINMOORE WAY	MODESTO	CA	95358	SSTS
FACILITY MAILING ADDRESS	500 WINMOORE WAY	MODESTO	CA	95358	TRIS
FACILITY MAILING ADDRESS	500 WINMOORE WAY	MODESTO	CA	95358	CA-CERS
OWNER	712 FAUST RD	MODESTO	CA	95358	CA-CERS
OPERATION MANAGER	500 WINMOORE WY	MODESTO	CA	95358	CA-CERS
OWNER	500 WINMOORE WAY	MODESTO	CA	95358	SSTS
ENVIRONMENTAL CONTACT	500 WINMOORE WAY	MODESTO	CA	95358	CA-CERS
SECONDARY EMERGENCY CONTACT	500 WINMOORE WY	MODESTO	CA	95358	CA-CERS
OPERATOR	500 WINMOORE WY	MODESTO	CA	95358	CA-CERS

Contacts

Affiliation Type	Full Name	Office Phone	Information System	Mailing Address
OWNER	MICHAEL HARVEY	2095309100	CA-CERS	View
COMPANY OFFICIAL	MICHAEL S HARVEY	20958195760104	SSTS	
OPERATOR	MIKE ARCHIBALD	2095819687	CA-CERS	View
ENVIRONMENTAL CONTACT	JON MACK HARVEY	2095819576	CA-CERS	View
PUBLIC CONTACT	MICHAEL HARVEY	2095819576	TRIS	
OPERATION MANAGER	MIKE ARCHIBALD	2099857661	CA-CERS	View
SECONDARY EMERGENCY CONTACT	MICHAEL HARVEY	2097657729	CA-CERS	View


Query executed on: JAN-22-2015

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FRS Facility Detail Report

ENVIRO TECH CHEMICAL SERVICES-PLANT 6

EPA Registry Id: 110063867383
 724 PHILLIPS COUNTY ROAD 411
 HELENA, AR 72342

Facility Registry Service Links:

- [Facility Registry Service \(FRS\) Overview](#)
- [FRS Facility Query](#)
- [FRS Organization Query](#)
- [EZ Query](#)
- [FRS Physical Data Model](#)
- [FRS Geospatial Model](#)

Legend

- ★ Selected Facility
- EPA Facility of Interest
- State/Tribe Facility of Interest

The facility locations displayed come from the FRS Spatial Coordinates tables. They are the best representative locations for the displayed facilities based on the accuracy of the collection method and quality assurance checks performed against each location. The North American Datum of 1983 is used to display all coordinates.

Information System	System Facility Name	Information System Id/Report Link	Environmental Interest Type	Data Source	Last Updated Date	Supplemental Environmental Interests
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (ICIS-NPDES)	ENVIRO TECH CHEMICAL SERVICES - PLANT 6	ARR001410	ICIS-NPDES NON-MAJOR	ICIS		ICIS- ENFORCEMENT/COMPLIANCE ACTIVITY
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (ICIS-NPDES)	ENVIRO TECH CHEMICAL SERVICES - PLANT 6	ARR001410	STORM WATER INDUSTRIAL	ICIS		ICIS- ENFORCEMENT/COMPLIANCE ACTIVITY
TOXIC RELEASE INVENTORY SYSTEM	ENVIRO TECH CHEMICAL SERVICES- PLANT 6	7234WWR1C724PH	TRI REPORTER	TRIS	06/13/2016	

Additional EPA Reports: [MyEnvironment](#) [Enforcement and Compliance](#) [Site Demographics](#) [Facility Coordinates Viewer](#) [Environmental Justice Map Viewer](#) [Watershed Report](#)

Standard Industrial Classification Codes (SIC)

Data Source	SIC Code	Description	Primary
NPDES	2869	INDUSTRIAL ORGANIC CHEMICALS, NOT ELSEWHERE CLASSIFIED	
NPDES	2819	INDUSTRIAL INORGANIC CHEMICALS, NOT ELSEWHERE CLASSIFIED	

Facility Codes and Flags

EPA Region:	06
Duns Number:	
Congressional District Number:	01
Legislative District Number:	
HUC Code/Watershed:	08020303 / LOWER WHITE
US Mexico Border Indicator:	
Federal Facility:	NO
Tribal Land:	NO

Alternative Names

No Alternative Names returned.

Organizations

No Organizations returned.

National Industry Classification System Codes (NAICS)

Data Source	NAICS Code	Description	Primary
TRIS	325998	ALL OTHER MISCELLANEOUS CHEMICAL PRODUCT AND PREPARATION MANUFACTURING.	
NPDES	325180	OTHER BASIC INORGANIC CHEMICAL MANUFACTURING	

Facility Mailing Addresses

Affiliation Type	Delivery Point	City Name	State	Postal Code	Information System
MAILING ADDRESS	500 WINMOORE WAY	MODESTO	CA	95358	NPDES
MAILING ADDRESS	500 WINMOORE WAY	MODESTO	CA	95358	TRIS
OPERATOR	500 WINMOORE WAY	MODESTO	CA	95358	NPDES

Contacts

Affiliation Type	Full Name	Office Phone	Information System	Mailing Address
OPERATOR	PHILLIP HARVEY	8885632254	NPDES	View

Query executed on: NOV-11-2016

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