

St Gabriel Laboratories

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April 15, 2004

Petition for inclusion on the National List of a Substance to be used for Organic Crop Production

Sodium lauryl sulfate has been extensively studied and characterized. The compelling justifications for inclusion as a synthetic substance on the National List are:

1. The NOP 205.601 (e) (6) allows use as an active ingredient in organic crop production as an insecticide. Based on environmental fate / exposure summary and detailed reports that are in the accompanying documentation, this appears to be a prudent decision. One would extrapolate that if it is reasonable to spray on crops, it is equally reasonable to spray beside the crops.
2. "The Food and Drug Administration (FDA) lists sodium lauryl sulfate as a food additive, has exempted it from the requirement of a food additive tolerance, and considers it Generally Recognized as Safe or GRAS (please see 21 CFR 172.822). Its non-pesticidal uses far outnumber its one pesticide use." Quote from EPA R.E.D. FACTS.
3. The EPA permits sodium lauryl sulfate to be used as an active ingredient in "Minimal Risk Pesticides Exempted under FIFRA Section 25 (b)."
4. Environmental Defense (www.scorecard.org) ranks sodium lauryl sulfate in the lowest 25 percentile for both Ecological Health Risk and Integrated Environmental Rankings.
5. Correspondence with the National Institute of Environmental Health Sciences indicate that "NIEHS does not have any reports on sodium lauryl sulfate." Additionally they indicate that "The following government databases which track *seriously* hazardous and toxic substances *do not* have a listing for sodium lauryl/dodecyl sulfate" and they go on to reference four additional government databases.

We request that the chemical sodium lauryl sulfate (CAS # 151-21-3) be added to the National List as a synthetic substance allowed for use in organic crop production, as an herbicide, with no restriction.



Richard A. Vento
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April 15, 2004

Petition for inclusion on the National List of a Synthetic Substance to be used for Organic Crop Production

1. (a) Substance's common name is SCT-535
(b) Substances chemical name: sodium lauryl sulfate. Sodium lauryl sulfate is a soap / detergent that is commonly used as an insecticide.
(c) Sodium Lauryl sulfate has a myriad of synonyms see ChemIndustry.com printout.
(d) Sodium Lauryl sulfate is widely used in food as an additive, in drugs (1 page from FDA www site attached), and in cosmetics.
2. Manufacturer: Southern Chemical and Textiles, Inc, PO Box 1511, 653 Peek Road, Dalton, Georgia, 30722 Telephone number 706-277-3993
3. Intended use is as an active ingredient in a pesticide.
4. The pesticide use more specifically is as a non-selective herbicide to be used in proximity of crops for organic production. Product will be sprayed on weeds adjacent to and not adjacent to crops. Since the product is an herbicide, users will take care to refrain from getting product on the crops and therefore drift to crops will be absolutely minimal. In addition drift to crops should present no concern as this material is already approved as a synthetic allowed as insecticides under 205.601(e)(6). We request that the chemical sodium lauryl sulfate (CAS # 151-21-3) be add to the National List as a synthetic substance allowed for use in organic crop production, as an herbicide , with no restriction.
5. Source of substance: We request that information be waived for the following reasons:
 - (1) This class of ingredients has already been allowed under the NOP per section 205.601(e)(6).
 - (2) Sodium lauryl sulfate is listed in 40 CFR section 152.25(g)(1) as an allowed active ingredient in Minimal Risk Pesticides Exempted under FIFRA Section 25(b).
 - (3) Sodium lauryl sulfate is permitted as a food additive for direct addition to food for human consumption. 21CFR172.822
 - (4) General manufacturing procedure is sulfation of lauryl alcohol followed by neutralization with sodium hydroxide. Ref: page 44-47 of the accompanying documents
6. Summary of any available previous reviews by state or private certification programs or other organizations of the petitioned substance. FDA document indicates that "The food additive sodium lauryl sulfate may be safely used in food in accordance with the following conditions:" and then goes on to list specific conditions. CFR Title 21, volume 3 CITE: 21CFR172.822 - Ref: page 22-23
7. Information regarding EPA, FDA, and State regulatory authority registrations: see attached R.E.D. FACTS which was downloaded from the EPA www site.
8. CAS number is 151-21-3 Label from product named BurnOut II that contains sodium lauryl sulfate is attached. This is a product that we would like to have used for organic production. Sodium lauryl sulfate is a widely used ingredient. The National Institutes of Health, National Library of Medicine www site lists seven products for use inside the home and 75 products that are classified as personal care / use. Sodium lauryl sulfate is widely used in drugs. A search of the FDA www site finds 294 hits. Included are the first ten hits.
9. (a) chemical interactions with other substances: see MSDS – Industrial Chemical section X Ref: page 57-60

(b) Toxicity: see NICNAS sheet Ref: page 11-16 and MSDS Stephan section 11 Ref: page 61-64

(b) Environmental persistence

“Environmental Fate/Exposure Summary:

Sodium lauryl sulfate's production and use as a surfactant may result in its release to the environment through various waste streams. If released to air, an estimated vapor pressure of 4.7×10^{-13} mm Hg at 25 deg C indicates **sodium lauryl sulfate** will exist solely in the particulate phase in the ambient atmosphere. Particulate-phase **sodium lauryl sulfate** will be removed from the atmosphere by wet and dry deposition. If released to soil, **sodium lauryl sulfate** is expected to have no mobility based upon an estimated Koc of 1.0×10^4 .

Volatilization from moist soil surfaces is not expected to be an important fate process based upon a water solubility of 1.00×10^5 mg/l and that it is a salt. **sodium lauryl sulfate** is not expected to volatilize from dry soil surfaces based upon its estimated vapor pressure. Approximately 60% of **sodium lauryl sulfate** present at 10 mg/kg, was mineralized in a creosote-contaminated sandy loam soil in 10 days. If released into water, **sodium lauryl sulfate** is expected to adsorb to suspended solids and sediment in water based upon the estimated Koc. Approximately 80% of the initial concentration (approximately 25 ppm) of **sodium lauryl sulfate** was biodegraded in four samples of surface water in 50-140 hours, depending upon the season in which the samples were collected and inoculum source. Volatilization from water surfaces is not expected to be an important fate process based upon this compound's water solubility and that it is a salt. An estimated BCF of 71 suggests the potential for bioconcentration in aquatic organisms is moderate. Hydrolysis of **sodium lauryl sulfate** is not expected to occur due to the lack of hydrolyzable functional groups. Occupational exposure to **sodium lauryl sulfate** may occur through inhalation of dust particles and dermal contact with this compound at workplaces where **sodium lauryl sulfate** is produced or used. The general population may be exposed through the use of food additives and other consumer products such as detergents, shampoos, and toothpaste products containing this compound. (SRC)

****PEER REVIEWED****

(b) Ecotoxicity: see MSDS Stephan section 12 Ref: page 61-64

(c) Environmental impacts: biodegradable ref. MSDS Stephan section 12 Ref: page 61-64

(d) Effects on human health: see MSDS Stephan section 3 and 4 Ref: page 61-64, see MSDS – Industrial Chemical section III and IV Ref: page 57-60 and see NICNAS sheet Ref: page 11-16

(e) Effects on soil organisms – sodium lauryl sulfate acts as an insecticide.

(e) Effects on crops – sodium lauryl sulfate is allowed per NOP 205.601(e)(6)

(e) Effects on livestock – product made with sodium lauryl sulfate does not have an intended use on livestock. It is likely that the effect would be similar to that on humans.

(f) Physical properties: see MSDS Industrial Chemical section IX (attached). Ref: page 41-42

10. (a) Safety information: see MSDS's Ref: page 57-64

(b) NIEHS substance report: “NIEHS does not have any reports on sodium lauryl sulfate.” Correspondence from NIEHS is attached, Ref: page 17-18.

11. Research information: There is a large amount of research information available. The accompanying documentation includes some of these topics with references.

12. Petition Justification Statement for inclusion of a synthetic substance on the National List

Sodium lauryl sulfate has been extensively studied and characterized. The compelling justifications for inclusion as a synthetic substance on the National List are:

1. The NOP 205.601 (e) (6) allows use as an active ingredient in organic crop production as an insecticide. Based on environmental fate / exposure summary (#9 above and detailed report is in the accompanying documentation) this appears to be a prudent decision. One would extrapolate that if it is reasonable to spray on crops, it is equally reasonable to spray beside the crops.

2. “The Food and Drug Administration (FDA) lists sodium lauryl sulfate as a food additive, has exempted it from the requirement of a food additive tolerance, and considers it Generally Recognized as Safe or GRAS

(please see 21 CFR 172.822). Its non-pesticidal uses far outnumber its one pesticide use.” Quote from EPA R.E.D. FACTS. Ref: page 19-21

3. The EPA permits sodium lauryl sulfate to be used as an active ingredient in “Minimal Risk Pesticides Exempted under FIFRA Section 25 (b).” Ref: page 73

4. Environmental Defense (www.scorecard.org) ranks sodium lauryl sulfate in the lowest 25 percentile for both Ecological Health Risk and Integrated Environmental Rankings. Ref: page 9

5. Correspondence with the National Institute of Environmental Health Sciences indicate that “NIEHS does not have any reports on sodium lauryl sulfate.” Additionally they indicate that “The following government databases which track seriously hazardous and toxic substances do not have a listing for sodium lauryl/dodecyl sulfate” and they go on to reference four additional government databases. Ref: page 17

Currently the predominant method of weed control is pulling them out of the ground. Many people who produce organic crops or who want to start an organic farming operation have approached us. The benefit to them is a reduced amount of physical labor. Therefore they will be able to produce organic crops at a cost that is economically justified. The availability of an easy to use herbicide will help encourage more people to convert to organic farming. The larger number of organic operations clearly produces general overall benefits to the environment, human health, and a farms ecosystem.

13. No claim of confidentiality is made for this petition.

We request that the chemical sodium lauryl sulfate (CAS # 151-21-3) be add to the National List as a synthetic substance allowed for use in organic crop production as an herbicide and with no restriction.

web sites

chemical info

market research

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Chemical:

Enter a chemical name, CAS Number, or molecular formula. Use * for partial names (i.e. chloro*)

171018 Chemical names 6/13/2003

Synonyms: Akyposal NLS, Alscop LN-40, LN-90, Calfoam SLS-30, Carsonol+so SLS Paste B, Chemsalan NLS 30, Dreff, Drene, Empicol+so 0303, Empicol+so LS30, Empicol+so LXV, Empicol+so LY28/S, Empicol+so LZG 30, Empicol+so LZP, Empimin+so LR28, Hartenol LAS-30, Marlinat+so DFK 30, Naxolate WA-97, Norfox+so SLS, Nutrapon DL 3891, Nutrapon W 1367, Nutrapon WAQE 2364, Octosol SLS, Orvus WA, Perlankrol+so DSA, Polystep+so B-3, Rewopol+so NLS 15 L, Rhodapon+so 101-10, Rhodapon+so LCP, sodium lauryl sulfate, Standapol+so WAQ-LC, Stepanol+so ME Dry, Stepanol+so WA Extra, Sulfetal C 38, Sulfochem SLN, Sulfochem SLP-95, Sulfochem SLS, Sulfochem SLX, Sulfopon 101, 101 Special, Sulfopon 101/POL, Sulfopon P-40, Sulfotex LCX, Sulfuric acid monododecyl ester sodium salt, Supralated ME, Texapon K-12, K-1296, L-100, Texapon K-1296, Texapon LS Highly Conc, Texapon OT Highly Conc. Needles, Texapon VHC Needles, ZHC Needles, Texapon ZHC Needles, Ufarol Na-30, Witcolate 6400,

Search for: sodium lauryl sulfate

Name sodium lauryl sulfate

CAS Number 151-21-3

Chemical Formula C₁₂H₂₆O₄S.Na

Graphic Not available

Search web sites for sodium lauryl sulfate

Find additional information about sodium lauryl sulfate at:



Xiameter, from Dow Corning, is a web-enabled business model offering the lowest base price for commonly used silicones through transparent and unprecedented pricing and transaction simplicity.

Chemical properties, names and structures

[NIST WebBook](#) by the National Institute of Standards and Technology

[ChemIDplus](#) by the National Library of Medicine (NLM)

[MatWeb](#) by Automation Creations, Inc.

[ChemExper](#) by ChemExper

[NCI Database](#) by W. D. Ihlenfeldt, Computer Chemistry Center, Institute of Organic Chemistry, Univ. of Erlangen-Nuremberg, Germany

[SDBS](#) (Spectral data) by the National Institute of Advanced Industrial Science and Technology Tsukuba, Ibaraki, Japan

[Merck ChemDat](#)

[Sigma Aldrich](#)

Safety and toxicology data

[ToxNet](#) by the National Library of Medicine (NLM)

[ChemFate](#) by the Syracuse Research Corporation

[Vermont SIRI](#) by the University of Vermont

[Cornell University](#)

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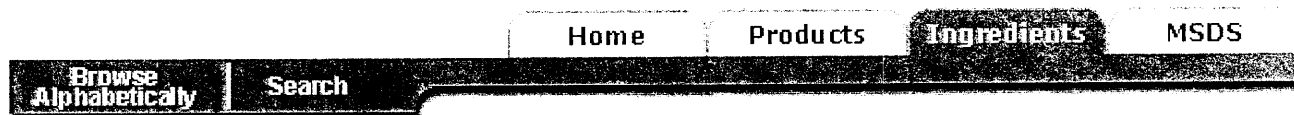
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Household Products Database

National Institutes of Health
National Library of Medicine
Specialized Information Services



Search as Ingredient

Chemical Information

Chemical Name: Sodium lauryl sulfate
CAS Registry Number: 000151-21-3
Synonyms: Sodium lauryl sulfate; Sulfuric acid monododecyl ester sodium salt; Sodium dodecyl sulfate; Dodecyl sulfate, sodium salt; Sodium lauryl sulfate ether; Sodium n-dodecyl sulfate; Sodium Lauryl Sulfate [USAN:JAN]
Health Studies: [Human Health Effects from HSDB](#)
Toxicity Information: [Search TOXNET](#)
Chemical Information: [Search ChemIDplus](#)

Products that contain this ingredient

| Brand | Category | Form | Percent |
|---|-------------------|---------|---------|
| Carpet Science Spot & Stain Remover | Home inside | liquid | 1-5 |
| Loctite Crafter's All Purpose Adhesive | Home inside | paste | 0.1-1 |
| Ivory Hand Dishwashing Liquid | Home inside | liquid | |
| Americas Home Value Carpet Cleaner | Home inside | aerosol | |
| FIT Powder Fruit and Vegetable Rinse | Home inside | powder | |
| Hagerty Silver Foam | Home inside | paste | |
| Loctite Fabric Glue | Home inside | paste | 0.1-1 |
| GoJo All Purpose Hand Soap | Personal care/use | liquid | <5 |
| Prograine Shampoo - Thinning Hair Use with extra volume | Personal care/use | liquid | |
| Suave Professionals Shampoo, Humectant | Personal care/use | liquid | |
| Oil of Olay Age Defying Series Daily Renewal Cleanser w Gentle Microbeads | Personal care/use | lotion | |
| Selsun Blue Shampoo, Moisturizing Treatment | Personal care/use | liquid | |
| Bath & Body Works Shower Gel - Flowering Herbs | Personal care/use | liquid | |
| Suave Shampoo for Dry or Damaged Hair, Tropical Coconut | Personal care/use | liquid | |
| Ultra Brite Toothpaste | Personal care/use | paste | |
| St. Ives Swiss Spa Extra Body Volumizing Shampoo with Chamomile & Sunflower | Personal care/use | liquid | |
| Ultra Hand Soap | Personal care/use | liquid | 10-30 |
| Clearasil StayClear Acne Defense Cleanser | Personal care/use | liquid | |
| Village Naturals Bubble Bath, Peach Medley | Personal care/use | liquid | |
| Revlon Eterna '27' All-Day Moisture Lotion | Personal care/use | liquid | |
| GoJo Lather & Klean Hair and Body Shampoo | Personal care/use | liquid | <5 |
| Aussie Mega Shampoo with Papaya Extract | Personal care/use | liquid | |
| Lever 2000 Moisturizing Body Wash, Perfectly Fresh | Personal care/use | liquid | |

Scent

| | | | |
|--|-------------------|-------------------|----|
| <u>Dermapro Lotion Skin Cleanser</u> | Personal care/use | liquid | <5 |
| <u>Selsun Blue Dandruff Shampoo, 2 in 1 Treatment</u> | Personal care/use | liquid | |
| <u>Salon Selectives Shampoo Level 4: Extra Moisturizing</u> | Personal care/use | liquid | |
| <u>Suave Professionals Shampoo, Awapuhi</u> | Personal care/use | liquid | |
| <u>Ivory Liquid Hand Soap (Clear)</u> | Personal care/use | liquid | |
| <u>Clairol Herbal Essences Shampoo - Fine/Limp Hair</u> | Personal care/use | liquid | |
| <u>Finesse Extra Moisturizing Shampoo - Dry</u> | Personal care/use | liquid | |
| <u>Suave Naturals Moisturizing Body Wash w/Aloe Vera & Vit. E, Sun-Ripe Raspbe</u> | Personal care/use | liquid | |
| <u>Cover Girl Clean Liquid Make-Up</u> | Personal care/use | liquid | |
| <u>Thicker Fuller Hair Moisturizing Shampoo</u> | Personal care/use | liquid | |
| <u>St. Ives Swiss Spa Strength Shampoo-Pear/Vit. A Normal/Dry Hair</u> | Personal care/use | liquid | |
| <u>Micrell Antibacterial Lotion Soap</u> | Personal care/use | liquid | <5 |
| <u>Ivory Skin Cleansing Liquid Gel</u> | Personal care/use | gel | |
| <u>Lever 2000 Family Body Wash, Pure Rain</u> | Personal care/use | liquid | |
| <u>Mentadent Advanced Whitening Fluoride Toothpaste w/Baking Soda and Peroxide</u> | Personal care/use | pump dispenser | |
| <u>GoJo E-2 Sanitizing One Step Skin Cleanser</u> | Personal care/use | liquid | <5 |
| <u>Aussie Custard Apple Shampoo</u> | Personal care/use | liquid | |
| <u>Suave Salon Formula Shampoo</u> | Personal care/use | liquid | |
| <u>DermaPro Body and Hair Shampoo</u> | Personal care/use | liquid | <5 |
| <u>Selsun Blue Dandruff Shampoo, Medicated Treatment</u> | Personal care/use | liquid | |
| <u>Clairol Loving Care Color Mousse</u> | Personal care/use | aerosol | |
| <u>Suave Moisturizing Shampoo for Dry or Damaged Hair</u> | Personal care/use | liquid | |
| <u>Barbasol Shaving Cream</u> | Personal care/use | cream | |
| <u>Ultra Brite Baking Soda Toothpaste</u> | Personal care/use | paste | |
| <u>Suave Moisturizing 2-in-1 Body Wash, Aloe Vera & Water Lily</u> | Personal care/use | liquid | |
| <u>Sesame Street Bubble Bath, Splashin Berry Bubbles</u> | Personal care/use | liquid | |
| <u>Revlon Age Defying SPF 8, Natural Tan</u> | Personal care/use | cream | |
| <u>GoJo Pink Cherry Skin Cleanser</u> | Personal care/use | liquid | <3 |
| <u>Aussie Real Volume Shampoo</u> | Personal care/use | liquid | |
| <u>Lever 2000 Moisturizing Body Wash, Morning Sky</u> | Personal care/use | liquid | |
| <u>Mentadent Fluoride Toothpaste w/Baking Soda & Peroxide, Fresh Mint</u> | Personal care/use | pump dispenser | |
| <u>Dermapro Spa Bath for Body & Hair Shampoo</u> | Personal care/use | liquid | <5 |
| <u>Salon Selectives Botanical Blends Shampoo: Aloe</u> | Personal care/use | liquid | |
| <u>Suave Professionals Shampoo, BioBasics</u> | Personal care/use | liquid | |
| <u>Old Spice Shave Cream</u> | Personal care/use | aerosolized cream | |
| <u>Clairol Herbal Essences Shampoo - Normal Hair</u> | Personal care/use | liquid | |
| <u>New Finesse Hydrating Silk Protein Enriched Adj. Shampoo</u> | Personal care/use | liquid | |
| <u>Suave Moisturizing 2-in-1 Body Wash, Moisture Rich</u> | Personal care/use | liquid | |
| <u>Cover Girl Remarkable Washable/Waterproof Mascara</u> | Personal care/use | semi-solid | |
| <u>Ultra Brite Gel</u> | Personal care/use | paste | |

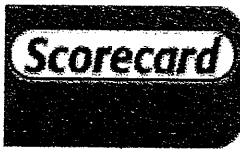
| | | | |
|---|-------------------|----------------|-------|
| • St. Ives Swiss Spa Revitaliz. Shampoo, Vanilla & Edelweiss - Damaged Hair | Personal care/use | liquid | |
| Pink Lotion Hand Soap | Personal care/use | liquid | 10-30 |
| Village Naturals Bubble Bath, Freesia & Flowers | Personal care/use | liquid | |
| Topol Whitening Anticavity Toothpaste, Spearmint | Personal care/use | paste | |
| GoJo Enhanced Formula Pink & Klean Skin Cleanser | Personal care/use | liquid | <3 |
| Aussie Wild Peach Shampoo | Personal care/use | liquid | |
| Suave Naturals Moisturizing Body Wash with Aloe Vera & Vitamin E, Freesia | Personal care/use | liquid | |
| Dermapro IHC Food Industry Sanitizing Soap | Personal care/use | liquid | <5 |
| Selsun Blue Dandruff Shampoo, Balanced Treatment | Personal care/use | liquid | |
| Freeman Botanicals Natural Hair Care: Apple Nectar | Personal care/use | liquid | |
| Suave Natural Care Shampoo, Tropical Coconut | Personal care/use | liquid | |
| Listermint Mouthwash | Personal care/use | liquid | |
| Suave Moisturizing 2-in-1 Body Wash, Passion Flower & Rosemary | Personal care/use | liquid | |
| Cover Girl Clean Fragrance Free Liquid Make Up | Personal care/use | liquid | |
| St. Ives Swiss Spa Clarif. Shampoo -Citrus & Ginseng for Normal/Oily Hair | Personal care/use | liquid | |
| Revlon Age Defying Makeup SPF 8, Fair Blush | Personal care/use | liquid | |
| GoJo White Blossom Skin Cleanser | Personal care/use | liquid | <5 |
| Clearly Natural Body Soap | Personal care/use | solid | 1 |
| Lever 2000 Moisturizing Body Wash, Fresh Fields Scent | Personal care/use | liquid | |
| Mentadent Fluoride Toothpaste, Multi-Action Tartar Control Anticavity | Personal care/use | pump dispenser | |

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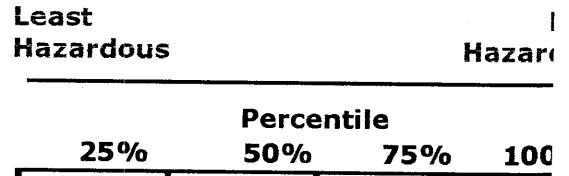


ENVIRONMENTAL DEFENSE
Finding the ways that work

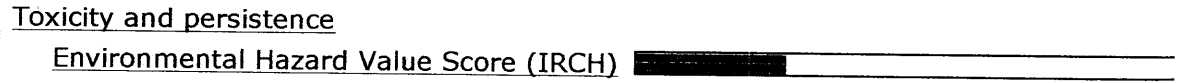
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ABOUT THE CHEMICALS | Hazard Rankings

Chemical: SODIUM LAURYL SULFATE
CAS Number: 151-21-3



Ecological Health Rankings



Integrated Environmental Rankings

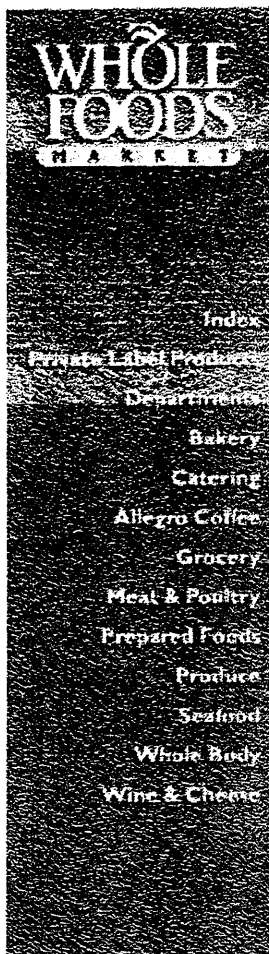


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Home : Products : Whole Body : SLS

Printer Friendly Version

Sodium Lauryl and Laureth Sulfate in Shampoo

A very widespread and persistent internet rumor has prompted many consumers to be worried that the shampoo they are using may actually cause cancer. Here's the facts regarding the two ingredients-sodium lauryl sulfate and sodium laureth sulfate-that have caused such a scare.

Contrary to the rumor, sodium lauryl sulfate (SLS) and sodium laureth sulfate (SLES) are not the same ingredient. SLS is a medium to strong surfactant (a surfactant is a "surface active agent" or detergent) that, when used alone or in high concentrations, can be irritating to some skin. In these instances, SLES is often used instead of, or in conjunction with, SLS. SLES is also a surfactant, but has a different chemical structure than SLS and is considered to be a mild to medium-strength cleanser.

SLS has been safely used for over 50 years and is approved by the FDA for use in cosmetics, supplements and in certain food applications (see the U.S. Code of Federal Regulations 21 CFR 172.822). The Cosmetics Toiletries and Fragrance Association (CTFA), which serves as the cosmetic industry advisory group to the FDA, has found no evidence that either SLS or SLES is carcinogenic. The American Cancer Society and the Cosmetic Ingredient Review have also published official statements refuting any claims regarding the carcinogenicity of SLS.

Because SLS is a very effective detergent, it can be used in many applications. However, the concentration and formulation of SLS that goes into toothpaste is much different than that of an industrial strength product not intended for human consumption or contact. Manufacturers must follow the manufacturing guidelines set by FDA relevant to the intended use of the product. Because SLS and SLES have been safely used in numerous products in many different categories of skin care, cosmetics, pharmaceuticals, and foods, we feel confident that both ingredients are indeed safe and effective when used appropriately.

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Existing Chemicals Information Sheet

SODIUM LAURYL SULFATE

01 April 2003

Chemical Abstract Service (CAS) Number: 151-21-3

General

Sodium lauryl sulfate (SLS) is an anionic surfactant. By lowering the surface tension of aqueous solutions, surfactants can act as wetting agents by enhancing the spread of water over surfaces.

Background

The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) has received a large number of enquiries regarding concern over data on the internet claiming SLS is hazardous to human health. In response to this concern, NICNAS undertook a literature search of the available data on the human health effects of SLS to prepare this existing chemical information sheet. It should be noted that a full independent hazard assessment on SLS has not been conducted by NICNAS. The data presented here are from secondary sources and though creditable publications, original publications have not been obtained and it has therefore not been possible to determine the robustness of the reported studies.

Data Sources

Data was obtained from the following sources:

1. IPCS (International Programme of Chemical Safety) (1997) International Chemical Safety Card
2. Cosmetic Ingredient Review (CIR), 1983
3. OECD (Organisation for Economic Co-operation and Development) (1997) Screening Information Data Set (SIDS) Initial Assessment
4. Hazardous Substances Data Bank (HSDB)
5. International Cosmetic Ingredient Dictionary and Handbook (1997)

Identity

Information on identity was obtained from the OECD SIDS Initial Assessment Report (SIAR) (1997) and the International Cosmetic Ingredient Dictionary and Handbook (1997).

There are a large number of synonyms for SLS available in the literature. Those most frequently cited are provided in Table 1.

Table 1 Frequently cited synonyms for sodium lauryl sulfate

| | Sodium lauryl sulfate |
|-------------------------------|---|
| Commonly used synonyms | Sodium dodecyl sulfate SDS Sulfuric acid, monododecyl ester, sodium salt Lauryl sodium sulfate Sodium N-dodecyl sulfate Lauryl sulfate sodium salt |
| Structural Formula | $\text{CH}_3-(\text{CH}_2)_{11}-\text{O}-\text{SO}_3\text{Na}^+$ |

Import, Manufacture and Use

Surfactants such as SLS are generally used as surface-active agents for their wetting, foaming, dispersing and emulsifying properties.

SLS has not been reported for listing on the NICNAS High Volume Industrial Chemicals List, a list compiled with industry of industrial chemicals that are manufactured and/or imported in Australia in volumes ≥ 1000 tonnes/year. However, data obtained from the Hazardous Substances Data Bank (HSDB) indicate the potential for widespread consumer exposure to SLS.

The major uses of SLS listed in HSDB are as a surface-active agent for emulsion polymerisation, in metal processing, detergents and shampoo; emulsifying, foaming, wetting, dispersing agent in creams, lotion and medical preparations; foaming, wetting, and dispersing agent in toothpaste, and emulsifier, whipping agent and surfactant in foods. Some specific examples of SLS use reported are in the preparation of blood samples for red blood cell counts, the electrophoretic separation and molecular weight estimation of proteins, the preparation of sample for dietary fibre content, the characterisation of quaternary ammonium compounds, the electroplating industry (nickel and zinc), and the formulation of injection-moulded explosives. SLS is also reportedly used as a cleansing agent in cosmetics; a whipping aid in dried egg products; food additive (emulsifier and thickener); emulsifier, wetting agent and adjuvant in insecticides; emulsifier and penetrant in varnish and paint remover; anti-foaming agent in solid rocket propellants; model surfactant and reference toxicant in aquatic and mammalian toxicological testing.

The inclusion of SLS as a cleansing agent in cosmetics means that consumer use of these products may result in contact with the general body surface, hair, nails, skin of the hand and face and mucosal surface.

Current Regulatory Status of Sodium Lauryl Sulfate in Australia

SLS is **NOT** listed in:

- the National Drugs and Poisons Schedule Committee (September 2002)
Standard for the Uniform Scheduling of Drugs and Poisons
- the National Occupational Health and Safety Commission (NOHSC) (1995)
Exposure Standards for Atmospheric Contaminants in the Occupational Environment

- the NOHSC (1999) *List of Designated Hazardous Substances*

However, any manufacturer or importer who supplies SLS for use at work is responsible for determining whether it is a hazardous substance in accordance with the National Occupational Health and Safety Commission's *Approved Criteria for Classifying Hazardous Substances*. If hazardous, the manufacturer or importer has a responsibility to classify and label the substance appropriately.

- **Data Sources for Human Health Effects**

Information on SLS was sourced primarily from the OECD SIAR (1997). The SIDS program is a voluntary cooperative international testing program that began in 1989, operating under the auspices of the chemicals program within the Environment Health and Safety Division of the OECD. The program focuses on developing base level test information on approximately 600 poorly characterised international High Production Volume (HPV) chemicals. Data are used to "screen" the chemicals and set priorities for further testing or risk assessment/management activities. A HPV chemical is one with a production volume >1000 tonnes/year in the EU and 10 000 pounds/year in the US. SLS is deemed a HPV chemical in both the EU and US.

Information on SLS and its formulations is also available from a CIR report (1983). Established in 1976 by the US-based Cosmetic, Toiletry and Fragrance Association (CTFA) with support from the US Food and Drug Administration and the Consumer Federation of America, the CIR reviews and assesses the safety of ingredients used in cosmetics. Although funded by CTFA, CIR and the review process are independent from CTFA and the cosmetic industry, and the results are published in the open peer-reviewed scientific literature. The CIR report contains numerous studies, of varying quality, for most human health endpoints, and has been used to provide data on those health effects not evaluated in the OECD SIAR (1997).

An overview of the data for human health effects is presented below, based on those study summaries in the OECD (1997) and CIR (1983) reports adjudged the most robustly reported and/or with methodology most comparable to the appropriate OECD Test Guideline. Additionally, a statement on the respiratory irritation of SLS, an endpoint not covered in either the OECD (1997) or CIR (1983) reports, obtained from the International Chemical Safety Card (1997) is included.

Health and Safety Information on the Chemical

Acute Toxicity

Acute toxicity data in the rat show that SLS is harmful by the oral route (LD₅₀ 1200 mg/kg bw), and data in the rabbit and guinea pig show it is harmful by the dermal route (LD₅₀ = ~600 mg/kg bw and >1200 mg/kg bw respectively).

Irritation

SLS is a skin and eye irritant in rabbits, and skin irritation has been observed in clinical studies in humans. Indeed in the human 4-hour patch test for irritation, SLS is used at 20% as a positive control to identify substances or preparations that would be on the borderline

for classification as irritant. SLS is also reported to irritate the respiratory tract.

Sensitisation

No data on skin sensitisation is available in these reviews. However, since OECD Test Guideline methodology for guinea pig skin sensitization predictive tests requires application of 10% SLS at induction to create local irritation for those test materials with no skin irritation potential, it is highly unlikely that SLS is a skin sensitiser as this could create concerns over potential cross sensitisation reactions at challenge with the test material.

Effects from Repeated Exposure

Oral (gavage) repeat exposure studies in rats showed the primary effect of SLS to be local irritation of the gastro-intestinal tract, with no effects seen at the 100 mg/kg bw/day dose level.

Genotoxicity

SLS was negative in an Ames (bacterial mutation) test, a gene mutation and sister chromatid exchange test in mammalian cells, as well as in an in vivo micronucleus assay in mice. The negative results from in vitro and in vivo studies indicate SLS does not interact with DNA.

Carcinogenicity

In the only carcinogenicity study available, SLS was not carcinogenic in Beagle dogs, though the short study duration and limited details provided limit the significance that can be attached to the data.

Reproductive Toxicity

No effect on fertility was seen in a study in male mice administered 100 mg/kg bw/day SLS, or on epididymal sperm in male mice administered SLS at a dose producing systemic toxicity: 1000 mg/kg bw/day. In developmental toxicity studies in the mouse and rabbit using doses of 0.2 to 600 mg/kg bw/day, total resorption of foetuses, increased litter loss and/or abortion were seen at 600 mg/kg bw/day in the presence of severe maternal toxicity. At 300 mg/kg bw/day no developmental toxicity was seen, though slight to moderate maternal toxicity was observed. Therefore, SLS is not considered a developmental toxicant, as the developmental effects seen were a secondary non-specific consequence of severe maternal toxicity.

Health and Safety Information on Formulations Containing Sodium Lauryl Sulfate

Information on formulations containing SLS at final tested concentrations ranging from 0.21 to 26% is available from studies for acute oral toxicity, and skin and eye irritation in animals, along with skin irritation and sensitisation clinical studies in humans. Together, these data support the findings on SLS that the chemical is of moderate acute oral toxicity, and irritant to the skin and eye in both animals and humans. Data in humans indicate SLS is not a skin sensitiser.

Human Experience

The CIR report (1983) contained cosmetic experience submissions for shampoos containing SLS. These data are presented in Table 2.

Table 2 Product use and safety-related complaints for SLS formulations

| % SLS present in shampoo | Sales of shampoo per annum in the USA | Total number of applications of shampoo per annum in USA | Number of safety-related complaints |
|--------------------------|---------------------------------------|--|--|
| 10 | 390 000 units | 8 580 000 | No complaints received in 2 years |
| 14.5 | Not reported | 200 000* | A total of 17 complaints over 7 years |
| 30 | 398 000 units | 4 852 620 | One complaint received in 2 years; an allergic/irritant reaction |

*It was reported that the cumulative total number of uses of the shampoo was 400 000 000.

Outcome of the SIDS OECD Initial Assessment (1997) and CIR (1983)

The OECD report (1997) concluded that, "The human health hazard assessment for SLS shows that at present the substance is of no concern for the general public (consumers) and for workers" and similarly the CIR report (1983) concluded, "SLS (and ALS) appear to be safe in [cosmetic] formulations designed for discontinuous, brief use followed by thorough rinsing from the surface of the skin. In products intended for prolonged contact with skin, concentrations should not exceed 1%."

Overall, there are no data in the OECD and CIR reports on SLS and their formulations to indicate SLS to be a skin sensitiser, genotoxic, carcinogenic, or a reproductive toxicant. The toxicity of SLS appears to be restricted to acute toxicity and skin and eye irritation. Indeed, for chronic toxicity, an oral study in the rat indicates that the primary health effect of SLS appears to be local irritation. However, these health effects are primarily based on the effects of SLS at high doses in studies in laboratory animals. The risk to humans from SLS will depend on the amount of exposure to the chemical. The amounts of SLS used in cosmetics, and hence the potential human exposure, is significantly smaller than that used in animal studies. Consequently, considering the human health effects associated with SLS together with data indicating potentially extensive use in both industrial and consumer areas, it appears that for consumers and workers, the human health hazards are low.

References

1. Cosmetic Ingredient Review (1983) Final report on the safety assessment of sodium lauryl sulfate and ammonium lauryl sulfate. Journal of the American College of Toxicology. Vol:2 (7),
2. HSDB (2001) Hazardous Substances Data Bank. National Library of Medicine, Bethesda, Maryland <<http://www.tomes.com>>, MICROMEDEX, Englewood, Colorado.
3. IPCS (1997) Sodium Lauryl Sulfate: International Chemical Safety Card 0502. Geneva, International Programme on Chemical Safety, World Health Organisation <<http://www.inchem.org/documents/icsc/icsc/eics0502.htm>>
4. The Cosmetic, Toiletry, and Fragrance Association (1997) International Cosmetic Ingredient Dictionary and Handbook, Washington DC, Ed Wenninger J.A and McEwan G.N,
5. National Drugs and Poisons Schedule Committee (2003) Standard for the Uniform Scheduling of Drugs and Poisons, Canberra, ACT, Australian Government Publishing Service.
6. NOHSC (1995) Exposure Standards for Atmospheric Contaminants in the Occupational Environment. Canberra, ACT, Australian Government Publishing Service.

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7. NOHSC (1999) List of Designated Hazardous Substances. Sydney, NSW, National Occupational Health and Safety Commission.
 8. OECD (1997) OECD Screening Information Data Set (SIDS), Initial Assessment Report Volume 4, Part 2: Sodium Dodecyl Sulfate, Paris, OECD

Richard Vento

From: Holmgren, Stephanie (NIH/NIEHS) <holmgren@niehs.nih.gov>
To: <richard@milkyaspore.com>
Sent: Friday, January 09, 2004 10:36 AM
Attach: Meditext.htm; DODECYL SULFATE, SODIUM SALT CHRIS - Chemical Hazard Response Information System.htm; Sulfuric acid, monododecyl ester, sodium salt - RTECS - Registry of Toxic Effects of Chemical Substances.htm
Subject: Sodium Lauryl Sulfate
Hi Richard,

Marie forwarded me the question you asked yesterday through Ask Us Live. I apologize for the technical difficulties, the virtual reference company changed some computer settings and we have been having technical difficulties ever since.

NIEHS report

In response to your question, NIEHS does not have any reports on sodium lauryl sulfate. Our National Toxicology Program did a mutagenicity study to determine if the chemical had any effect on our genes. The results were negative. If you want to see the report, go to http://ntp-server.niehs.nih.gov/cgi/iH_Indexes/ALL_SRCH/iH_ALL_SRCH_Frames.html and type in "sodium dodecyl sulfate" (a synonym for sodium lauryl sulfate) in the search field.

The following government databases which track *seriously* hazardous and toxic substances *do not* have a listing for sodium lauryl/dodecyl sulfate.

- **Agency for Toxic Substances and Disease Registry** (<http://www.atsdr.cdc.gov/toxpro2.html>)
- **International Agency for Research on Cancer Monographs** (<http://monographs.iarc.fr/>) publishes independent assessments by international experts of the carcinogenic risks posed to humans by a variety of agents, mixtures and exposures

- **The Environmental Protection Agency's Integrated Risk Information System** (<http://www.epa.gov/iris/>)

Other Reports on Sodium Lauryl Sulfate

I also checked the following free government databases. They have a few reports related to the toxicity of the chemical - mostly in terms of skin irritation for topical uses (shampoo, mouthwash) and stomach and liver problems if inhaled or ingested.

Household Products Database (<http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=98&query=sodium+lauryl+sulfate>)

This database is designed for the public to learn more about the nature of chemicals found in everyday household items. Also check out the links for health studies from the Hazardous Substances Data Bank (HSDB), toxicity information from TOXNET, and chemical information from ChemIDPlus. These last three government databases are key sources of chemical information to keep in mind.

Environmental Defense Fund's Environmental Scorecard (http://www.scorecard.org/chemical-profiles/summary.tcl?edf_substance_id=151-21-3)

Attached are three reports from other databases that are not publicly accessible.

<<Meditext.htm>> <<DODECYL SULFATE, SODIUM SALT CHRIS - Chemical Hazard Response Information System.htm>> <<Sulfuric acid, monododecyl ester, sodium salt - RTECS - Registry of Toxic Effects of Chemical Substances.htm>>

This is probably more information than you needed. If you have any questions, please feel free to contact me.

Stephanie

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R.E.D. FACTS

Lauryl Sulfate Salts

Pesticide Reregistration

All pesticides sold or distributed in the United States must be registered by EPA, based on scientific studies showing that they can be used without posing unreasonable risks to people or the environment. Because of advances in scientific knowledge, the law requires that pesticides which were first registered years ago be reregistered to ensure that they meet today's more stringent standards.

In evaluating pesticides for reregistration, EPA obtains and reviews a complete set of studies from pesticide producers, describing the human health and environmental effects of each pesticide. The Agency imposes any regulatory controls that are needed to effectively manage each pesticide's risks. EPA then reregisters pesticides that can be used without posing unreasonable risks to human health or the environment.

When a pesticide is eligible for reregistration, EPA announces this and explains why in a Reregistration Eligibility Decision (RED) document. This fact sheet summarizes the information in the RED document for the case Lauryl Sulfate Salts, which contains the active ingredient sodium lauryl sulfate.

Use Profile

Sodium lauryl sulfate is used as a flea and tick repellent in one registered pesticide product--a flea and tick shampoo for cats and dogs. Sodium lauryl sulfate also is a widely used component of many non-pesticidal consumer products currently marketed in the United States, including shampoos and fruit juices.

Regulatory History

The reregistration case Lauryl Sulfate Salts originally included four active ingredients (sodium lauryl sulfate, magnesium lauryl sulfate, ammonium lauryl sulfate, and triethanolamine lauryl sulfate). In May 1988, EPA announced that these four active ingredients have no independent pesticidal activity when included in antimicrobial products, and thus are properly classified as inert ingredients in those products (please see 40 CFR 153.139). Therefore, the antimicrobial products that contain these active ingredients are not subject to this RED.

Currently, only sodium lauryl sulfate has an active (end-use) pesticide product registration, for a ready-to-use liquid pet shampoo called "Dr.

Dogkatz Critter Chaser." EPA has not issued a Data Call-In (DCI) requesting generic data on sodium lauryl sulfate prior to this RED.

The Food and Drug Administration (FDA) lists sodium lauryl sulfate as a food additive, has exempted it from the requirement of a food additive tolerance, and considers it Generally Recognized as Safe or GRAS (please see 21 CFR 172.822). Its non-pesticidal uses far outnumber its one pesticide use.

Human Health and Environmental Assessment

Sodium lauryl sulfate is among those pesticides for which EPA believes a broadly reduced set of generic data requirements is appropriate for reregistration. The Agency therefore has waived most generic data requirements with the exception of studies that are considered essential, including additional information about chemical purity and product chemistry studies. In evaluating sodium lauryl sulfate's potential risks to human health and the environment, EPA relied on information commonly available in scientific literature.

Sodium lauryl sulfate is a detergent-like substance that employs a non-toxic mode of action in controlling fleas and ticks on household pets. The potential for dermal and/or inhalation exposure exists to people applying the registered pet shampoo product. However, this exposure is not considered significant and does not create a health risk concern. Published reports suggest that sodium lauryl sulfate has low acute mammalian toxicity and no known chronic effects. EPA has no reports of adverse effects resulting from its use. Both exposure and health risks to people using the product are expected to be low.

EPA also believes that since the pesticide is used only on pets, negligible exposure to the environment and to nontarget organisms will result. The Agency concludes that the registered product and use of sodium lauryl sulfate should not result in unreasonable adverse effects to human health or the environment.

Additional Data Required

Although EPA has waived most generic studies, the Agency is requiring additional details about the chemical characterization of the sodium lauryl sulfate used in the formulated product. EPA also is requiring product-specific data, including product chemistry, acute toxicity and efficacy studies, as well as revised Confidential Statements of Formula and revised labeling, for reregistration.

Product Labeling Changes Required

The label of the registered end-use pesticide product containing sodium lauryl sulfate must comply with EPA's current pesticide labeling

requirements. In addition, labeling must specify which pets/animals may be treated with the product.

Regulatory Conclusion

Use of the registered pesticide product containing sodium lauryl sulfate in accordance with approved labeling will not pose unreasonable risks or adverse effects to humans or the environment. Therefore, all current uses of the product are eligible for reregistration. This product will be reregistered once the required physical chemistry data, product-specific data, revised Confidential Statement of Formula and revised labeling are received and accepted by EPA.

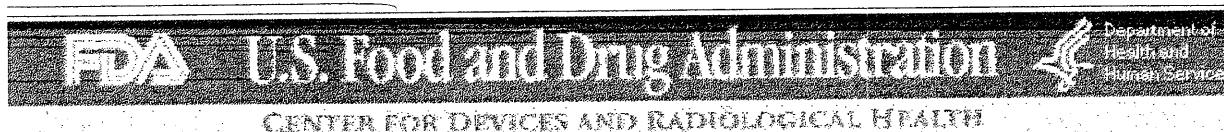
For More Information

EPA is requesting public comments on the Reregistration Eligibility Decision (RED) document for Lauryl Sulfate Salts during a 60-day time period, as announced in a Notice of Availability published in the Federal Register. To obtain a copy of the RED document or to submit written comments, please contact the Pesticide Docket, Public Response and Program Resources Branch, Field Operations Division (7506C), Office of Pesticide Programs (OPP), US EPA, Washington, DC 20460, telephone 703-305-5805.

Following the comment period, the Lauryl Sulfate Salts RED document will be available from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161, telephone 703-487-4650.

For more information about EPA's pesticide reregistration program, the Lauryl Sulfate Salts RED, or reregistration of the product containing sodium lauryl sulfate, please contact the Special Review and Reregistration Division (7508W), OPP, US EPA, Washington, DC 20460, telephone 703-308-8000.

For information about the health effects of pesticides, or for assistance in recognizing and managing pesticide poisoning symptoms, please contact the National Pesticides Telecommunications Network (NPTN). Call toll-free 1-800-858-7378, between 8:00 am and 6:00 pm Central Time, Monday through Friday.



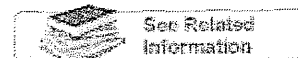
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 [Title 21, Volume 3]
 [Revised as of April 1, 2003]
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TITLE 21--FOOD AND DRUGS

CHAPTER I--FOOD AND DRUG ADMINISTRATION
 DEPARTMENT OF HEALTH AND HUMAN SERVICES

PART 172--FOOD ADDITIVES PERMITTED FOR DIRECT ADDITION TO FOOD FOR HUMAN CONSUMPTION

Subpart I--Multipurpose Additives

Sec. 172.822 Sodium lauryl sulfate.

The food additive sodium lauryl sulfate may be safely used in food in accordance with the following conditions:

(a) The additive meets the following specifications:

(1) It is a mixture of sodium alkyl sulfates consisting chiefly of sodium lauryl sulfate
 $[CH_2(CH_2)_{10}CH_2OSO_2Na]$.

(2) It has a minimum content of 90 percent sodium alkyl sulfates.
 (b) It is used or intended for use:

(1) As an emulsifier in or with egg whites whereby the additive does not exceed the following limits:

Egg white solids, 1,000 parts per million.
 Frozen egg whites, 125 parts per million.
 Liquid egg whites, 125 parts per million.

(2) As a whipping agent at a level not to exceed 0.5 percent by weight of gelatine used in the preparation of marshmallows.

(3) As a surfactant in:

(i) Fumaric acid-acidulated dry beverage base whereby the additive does not exceed 25 parts per million of the finished beverage and such beverage base is not for use in a food for which a standard of identity established under section 401 of the Act precludes such use.

(ii) Fumaric acid-acidulated fruit juice drinks whereby the additive

does not exceed 25 parts per million of the finished fruit juice drink and it is not used in a fruit juice drink for which a standard of identity established under section 401 of the Act precludes such use.

(4) As a wetting agent at a level not to exceed 10 parts per million in the partition of high and low melting fractions of crude vegetable oils and animal fats, provided that the partition step is followed by a conventional refining process that includes alkali neutralization and deodorization of the fats and oils.

(c) To insure the safe use of the additive, the label of the food additive container shall bear, in addition to the other information required by the Act:

(1) The name of the additive, sodium lauryl sulfate.

(2) Adequate use directions to provide a final product that complies with the limitations prescribed in paragraph (b) of this section.

[42 FR 14491, Mar. 15, 1977, as amended at 43 FR 18668, May 2, 1978]

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... and vote on zinc chloride, **sodium citrate**, hydrogen peroxide, and **sodium lauryl sulfate** in combination. Transcript can be ordered from the Freedom is ...
www.fda.gov/cder/audiences/acspage/nonprescriptionmeetings1.htm - 10-30-2003 - [Cached](#)

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... TO FOOD FOR HUMAN CONSUMPTION Subpart I—Multipurpose Additives Sec. 172.822 **Sodium lauryl sulfate**. The food additive **sodium lauryl sulfate** may be safely used ...
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... The capsule shell contains the following inactive ingredients and 23 dyes: gelatin, **sodium lauryl sulfate**, titanium dioxide and/or yellow iron oxide. The ...

<http://google.fda.gov/search?q=sodium+lauryl+sulfate&btnG=Search&restrict=&site=FDA&output=x...> 1/8/04

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[\[PDF\] NDA 50-670/S-014 NDA 50-693/S-002 NDA 50-710/S-006 NDA 50-711/ ...](#)
... pregelatinized starch, **sodium croscarmellose**, magnesium stearate, **sodium lauryl sulfate**, hydroxypropyl methylcellulose, lactose, titanium dioxide, triacetin ...
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... and the following inactive ingredients: lactose monohydrate, magnesium stearate, **sodium lauryl sulfate**, and **sodium starch glycolate**. The capsule shell contains ...
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SODIUM LAURYL SULFATE

CASRN: 151-21-3

*For other data, click on the Table of Contents***Human Health Effects:****Human Toxicity Excerpts:**

...SODIUM LAURYL SULFATE CAN PRODUCE ALLERGIC SENSITIVITY REACTIONS.
[American Medical Association, AMA Department of Drugs, AMA Drug Evaluations. 3rd ed. Littleton, Massachusetts: PSG Publishing Co., Inc., 1977. 896]**PEER REVIEWED**

/SODIUM LAURYL SULFATE/...MAY PRODUCE DRYING EFFECT ON SKIN.
[American Hospital Formulary Service. Volumes I and II. Washington, DC: American Society of Hospital Pharmacists, to 1984.,p. 84:20]**PEER REVIEWED**

SODIUM LAURYL SULFATE IS SAID TO HAVE BEEN COMMONEST CAUSE OF EYE IRRITATION BY COMMERCIAL SHAMPOOS.

[Grant, W. M. Toxicology of the Eye. 2nd ed. Springfield, Illinois: Charles C. Thomas, 1974. 964]**PEER REVIEWED**

AMONG 242 PATIENTS SUFFERING FROM ECZEMATOUS DERMATITIS, THE PERCENTAGE OF ALLERGIC REACTIONS REACHED 54.6%. GREAT NUMBER OF ALLERGIC REACTIONS TO SODIUM LAURYL SULFATE (6.4%) WAS OBSERVED.

[BLONDEEL A ET AL; CONTACT DERMATITIS 4(5) 270 (1978)]**PEER REVIEWED**

WIDELY USED ANIONIC DETERGENTS OF LOW ACUTE & CHRONIC TOXICITY. /ALKYL SODIUM SULFATES/

[Gosselin, R.E., H.C. Hodge, R.P. Smith, and M.N. Gleason. Clinical Toxicology of Commercial Products. 4th ed. Baltimore: Williams and Wilkins, 1976.,p. II-178]**PEER REVIEWED**

Poison by intravenous and intraperitoneal routes. Moderately toxic by ingestion and a human skin irritant.
[Lewis, R.J. Sax's Dangerous Properties of Industrial Materials. 9th ed. Volumes 1-3. New York, NY: Van Nostrand Reinhold, 1996. 2974]**PEER REVIEWED**

Probable Routes of Human Exposure:

Occupational exposure to sodium lauryl sulfate may occur through inhalation of dust particles and dermal contact with this compound at workplaces where sodium lauryl sulfate is produced or used(1). The general population may be exposed through the use of food additives and other consumer products such as detergents, shampoos, and toothpaste products containing this compound(SRC).

[(1) Painter HA; pp. 1-88 in The Handbook of Environmental Chemistry, Vol 3, Part F, Anthropogenic Compounds, Detergents; Hutzinger O, ed, Heidelberg, Berlin: Springer Verlag (1992)]**PEER REVIEWED**

Minimum Fatal Dose Level:

3. 3= MODERATELY TOXIC: PROBABLE ORAL LETHAL DOSE (HUMAN) 0.5-5 G/KG, BETWEEN 1 OZ & 1 PINT (OR 1 LB) FOR 70 KG PERSON (150 LB). /ALKYL SODIUM SULFATES/

[Gosselin, R.E., H.C. Hodge, R.P. Smith, and M.N. Gleason. Clinical Toxicology of Commercial Products. 4th ed. Baltimore: Williams and Wilkins, 1976.,p. II-178]**PEER REVIEWED**

REVIEWED**

SODIUM LAURYL SULFATE

CASRN: 151-21-3

*For other data, click on the Table of Contents***Emergency Medical Treatment:****Emergency Medical Treatment:****EMT Copyright Disclaimer:**

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The following Overview, *** DETERGENTS AND SOAPS-ANIONIC AND NONIONIC ***, is relevant for this HSDB record chemical.

Life Support:

- o This overview assumes that basic life support measures have been instituted.

Clinical Effects:

0.2.1 SUMMARY OF EXPOSURE

0.2.1.1 ACUTE EXPOSURE

- A. Nausea, vomiting and diarrhea are the most common manifestations of toxicity. Persistent effects may rarely result in dehydration and electrolyte abnormalities, most notably hypochloremic metabolic acidosis. Mild eye irritation is common; some agents will produce more severe irritation.
- B. Aspiration may result in upper airway edema and considerable respiratory distress.
- C. Low-phosphate detergents are generally more alkaline; ingestion may result in oral and esophageal burns.

0.2.4 HEENT

0.2.4.1 ACUTE EXPOSURE

- A. Eye exposure to most anionic and nonionic detergents and soaps results in momentary eye irritation with no permanent eye damage. Eye exposure to low-phosphate detergents, which are comparatively more alkaline, may result in eye injury.

0.2.6 RESPIRATORY

0.2.6.1 ACUTE EXPOSURE

- A. Occupational asthma has been reported. Aspiration may result in upper airway edema and considerable respiratory distress. Difficulty in breathing has been described in animals inhaling high concentrations of anionic surfactants.

0.2.8 GASTROINTESTINAL

0.2.8.1 ACUTE EXPOSURE

- A. Nausea, vomiting and diarrhea are common after ingestion. Oral, pharyngeal and esophageal burns may occur after ingestion of low-phosphate detergents, which are generally more alkaline. Colitis, esophageal stricture and irritation of mucous membranes have also

been reported.

0.2.10 GENITOURINARY

0.2.10.1 ACUTE EXPOSURE

- A. Ingestion of alkyl aryl sulfate produced no effect on kidney function.

0.2.12 FLUID-ELECTROLYTE

0.2.12.1 ACUTE EXPOSURE

- A. Metabolic alkalosis may develop secondary to vomiting.

0.2.14 DERMATOLOGIC

0.2.14.1 ACUTE EXPOSURE

- A. Skin irritation has been reported after prolonged occupational dermal contact. Skin dryness, irritation and contact dermatitis have been reported after varying degrees of exposure to detergents. Eczema resulted from occupational exposure to surfactants.

0.2.19 IMMUNOLOGIC

0.2.19.1 ACUTE EXPOSURE

- A. The use of a soap enema has been associated with an anaphylactic reaction.

Laboratory:

- A. Determine serum electrolytes when ingestion is associated with persistent vomiting.

Treatment Overview:

0.4.2 ORAL EXPOSURE

- A. DILUTION: Immediately dilute with 4 to 8 ounces (120 to 240 mL) of water or milk (not to exceed 4 ounces/120 mL in a child).
- B. SPONTANEOUS EMESIS FREQUENTLY OCCURS following ingestion. If spontaneous emesis does not occur then significant ingestion is unlikely.
- C. Administration of activated charcoal is unnecessary.
- D. Observe patients with ingestion carefully for the possible development of esophageal or gastrointestinal tract irritation or burns. If signs or symptoms of esophageal irritation or burns are present, consider endoscopy to determine the extent of injury.
- E. Patient should be evaluated for burns to the mouth and esophagus following ingestion of low phosphate detergents which are generally more alkaline.

0.4.3 INHALATION EXPOSURE

- A. INHALATION: Move patient to fresh air. Monitor for respiratory distress. If cough or difficulty breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis. Administer oxygen and assist ventilation as required. Treat bronchospasm with inhaled beta2 agonist and oral or parenteral corticosteroids.

0.4.4 EYE EXPOSURE

- A. DECONTAMINATION: Irrigate exposed eyes with copious amounts of room temperature water for at least 15 minutes. If irritation, pain, swelling, lacrimation, or photophobia persist, the patient should be seen in a health care facility.

0.4.5 DERMAL EXPOSURE

- A. DECONTAMINATION: Remove contaminated clothing and jewelry; wash exposed area with copious amounts of water. A physician may need to examine the area if irritation or pain persists.

Range of Toxicity:

- A. Ingestion of nonionic or anionic detergents alone is not generally serious.
- B. Ingestion of automatic dishwasher soaps or low-phosphate detergents, which are usually more alkaline, may result in burns of the mouth, pharynx and esophagus.
- C. Ingestion of hand soap bars is generally associated with emesis and mild diarrhea. As mortality is extremely rare, and toxicity becomes readily apparent with vomiting and diarrhea, there is little point in estimating a toxic dose.
- D. Eye contact injuries may occur with these agents causing varying degrees of damage.

[Rumack BH POISINDEX(R) Information System Micromedex, Inc., Englewood, CO, 2003; CCIS Volume 118, edition expires Nov, 2003. Hall AH & Rumack BH (Eds): TOMES(R) Information System Micromedex, Inc., Englewood, CO, 2003; CCIS Volume 118, edition expires Nov, **PEER REVIEWED**

SODIUM LAURYL SULFATE

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*For other data, click on the Table of Contents***Animal Toxicity Studies:****Non-Human Toxicity Excerpts:**

IN SUBACUTE AND CHRONIC FEEDING TESTS, EVEN FATALLY POISONED ANIMALS SHOW ONLY DIARRHEA AND INTESTINAL BLOATING, WITH NO GROSS LESIONS OUTSIDE OF THE GASTROINTESTINAL TRACT.

[Gosselin, R.E., H.C. Hodge, R.P. Smith, and M.N. Gleason. Clinical Toxicology of Commercial Products. 4th ed. Baltimore: Williams and Wilkins, 1976.,p. II-178]**PEER REVIEWED**

ACUTE ORAL TOXICITY IN RATS: LOW ORAL TOXICITY. ACUTE EFFECTS ON SKIN: NOT IRRITATING IN LOW CONCENTRATIONS. METABOLIC FATE AND REMARKS: RATS TOLERATE 1% IN DIET; DECREASED GROWTH AT 4%. /FROM TABLE/

[Patty, F. (ed.). Industrial Hygiene and Toxicology: Volume II: Toxicology. 2nd ed. New York: Interscience Publishers, 1963. 1844]**PEER REVIEWED**

TAKEN BY MOUTH, SODIUM LAURYL SULFATE STIMULATES GASTRIC MUCUS PRODUCTION AND SOMETIMES INACTIVATES PEPSIN IN TEST ANIMALS.

[Gosselin, R.E., H.C. Hodge, R.P. Smith, and M.N. Gleason. Clinical Toxicology of Commercial Products. 4th ed. Baltimore: Williams and Wilkins, 1976.,p. II-178]**PEER REVIEWED**

.../SODIUM LAURYL SULFATE USP/ TESTED @ CONCN OF 0.5% TO 1% IN WATER &...FOUND SIGNIFICANTLY IRRITATING OR INJURIOUS TO RABBIT EYE... RABBIT'S EYE APPARENTLY ARE MORE IRRITATED THAN HUMAN'S OR MONKEYS'. ...INJECTED INTO EYE (INTO VITREOUS HUMOR) IN RABBITS HAS CAUSED SEVERE INFLAMMATION.

[Grant, W.M. Toxicology of the Eye. 3rd ed. Springfield, IL: Charles C. Thomas Publisher, 1986. 874]**PEER REVIEWED**

SODIUM LAURYL SULFATE ADMIN TO VAGINAL MUCOSA OF GUINEA PIG FOR 7 DAYS IN SLOW RELEASE FASHION; RESPONSE PREDICTED FROM KNOWLEDGE OF SKIN IRRITANCY WAS CONFIRMED.

[WAGNER GS ET AL; A TEST PROCEDURE FOR EVALUATING IRRITANCY IN THE RODENT VAGINA, AND EFFECTS OF MODEL IRRITANTS; PROCTER & GAMBLE CO, CINCINNATI, OH]**PEER REVIEWED**

Sodium dodecyl sulfate was found to be negative when tested for mutagenicity using the Salmonella/microsome preincubation assay, using the standard protocol approved by the National Toxicology Program (NTP). Sodium dodecyl sulfate was tested in as many as 5 Salmonella typhimurium strains (TA1535, TA1537, TA97, TA98, and TA100) in the presence and absence of rat and hamster liver S-9, at doses of 0.003, 0.010, 0.033, 0.100, 0.333, and 1.000 mg/plate. The highest ineffective dose tested in any S. typhimurium strain was 1.000 mg/plate.

[Mortelmans K et al; Environ Mutagen 8:1-119 (1986)]**PEER REVIEWED**

Non-Human Toxicity Values:

LD50 Rat oral 1288 mg/kg

[Lewis, R.J. Sax's Dangerous Properties of Industrial Materials. 9th ed. Volumes 1-3. New

York, NY: Van Nostrand Reinhold, 1996. 2974]**PEER REVIEWED**

LD50 Rat ip 210 mg/kg

[Lewis, R.J. Sax's Dangerous Properties of Industrial Materials. 9th ed. Volumes 1-3. New York, NY: Van Nostrand Reinhold, 1996. 2974]**PEER REVIEWED**

LD50 Rat iv 118 mg/kg

[Lewis, R.J. Sax's Dangerous Properties of Industrial Materials. 9th ed. Volumes 1-3. New York, NY: Van Nostrand Reinhold, 1996. 2974]**PEER REVIEWED**

LD50 Mouse ip 250 mg/kg

[Lewis, R.J. Sax's Dangerous Properties of Industrial Materials. 9th ed. Volumes 1-3. New York, NY: Van Nostrand Reinhold, 1996. 2974]**PEER REVIEWED**

LD50 Mouse iv 118 mg/kg

[Lewis, R.J. Sax's Dangerous Properties of Industrial Materials. 9th ed. Volumes 1-3. New York, NY: Van Nostrand Reinhold, 1996. 2974]**PEER REVIEWED**

SODIUM LAURYL SULFATE

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*For other data, click on the Table of Contents***Metabolism/Pharmacokinetics:****Absorption, Distribution & Excretion:**

UPTAKE, TISSUE DISTRIBUTION, & ELIMINATION OF NA N-LAURYL SULFATE WERE INVESTIGATED IN CARP. CONCEN FACTORS FOR HEPATOPANCREAS & GALLBLADDER WERE 50 & 700 RESPECTIVELY. MAX WHOLE-BODY LEVELS WERE REACHED DURING 24-72 HR. SURVIVAL TIME DECR WITH INCR WATER HARDNESS.

[WAKABAYASHI M ET AL; CHEMOSPHERE 7(11) 917 (1978)]**PEER REVIEWED**

Interactions:

MAY COMPLEX CATIONIC AGENTS INCL COMMONLY USED QUATERNARY AMMONIUM COMPD. THIS CAN BE BENEFICIAL AS SUCH REACTION DECR SKIN SENSITIZING PROPERTIES OF BACITRACIN.

[Rossoff, I.S. Handbook of Veterinary Drugs. New York: Springer Publishing Company, 1974. 542]**PEER REVIEWED**

SODIUM LAURYL SULFATE INCREASES THE PERMEABILITY OF THE STRATUM CORNEUM NOT ONLY TO MEDICAMENTS BUT ALSO TO NOXIOUS AGENTS AND THUS MAY DIRECTLY OR INDIRECTLY PRODUCE IRRITATION.

[American Medical Association, Council on Drugs. AMA Drug Evaluations. 2nd ed. Acton, Mass.: Publishing Sciences Group, Inc., 1973. 658]**PEER REVIEWED**

SODIUM LAURYL SULFATE

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For other data, click on the Table of Contents

Pharmacology:

Therapeutic Uses:

SODIUM LAURYL SULFATE MAY BE USED AS SHAMPOO FOR CLEANSING OF SCALP & IN TREATMENT OF DANDRUFF, SEBORRHEA, SEBORRHEIC DERMATITIS, & PSORIASIS.

[American Hospital Formulary Service. Volumes I and II. Washington, DC: American Society of Hospital Pharmacists, to 1984.,p. 84:20]**PEER REVIEWED**

Interactions:

MAY COMPLEX CATIONIC AGENTS INCL COMMONLY USED QUATERNARY AMMONIUM COMPD. THIS CAN BE BENEFICIAL AS SUCH REACTION DECR SKIN SENSITIZING PROPERTIES OF BACITRACIN.

[Rossoff, I.S. Handbook of Veterinary Drugs. New York: Springer Publishing Company, 1974. 542]**PEER REVIEWED**

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[American Medical Association, Council on Drugs. AMA Drug Evaluations. 2nd ed. Acton, Mass.: Publishing Sciences Group, Inc., 1973. 658]**PEER REVIEWED**

Minimum Fatal Dose Level:

3. 3= MODERATELY TOXIC: PROBABLE ORAL LETHAL DOSE (HUMAN) 0.5-5 G/KG, BETWEEN 1 OZ & 1 PINT (OR 1 LB) FOR 70 KG PERSON (150 LB). /ALKYL SODIUM SULFATES/

[Gosselin, R.E., H.C. Hodge, R.P. Smith, and M.N. Gleason. Clinical Toxicology of Commercial Products. 4th ed. Baltimore: Williams and Wilkins, 1976.,p. II-178]**PEER REVIEWED**

SODIUM LAURYL SULFATE

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*For other data, click on the Table of Contents***Environmental Fate & Exposure:****Environmental Fate/Exposure Summary:**

Sodium lauryl sulfate's production and use as a surfactant may result in its release to the environment through various waste streams. If released to air, an estimated vapor pressure of 4.7×10^{-13} mm Hg at 25 deg C indicates sodium lauryl sulfate will exist solely in the particulate phase in the ambient atmosphere. Particulate-phase sodium lauryl sulfate will be removed from the atmosphere by wet and dry deposition. If released to soil, sodium lauryl sulfate is expected to have no mobility based upon an estimated Koc of 1.0×10^4 . Volatilization from moist soil surfaces is not expected to be an important fate process based upon a water solubility of 1.00×10^5 mg/l and that it is a salt. Sodium lauryl sulfate is not expected to volatilize from dry soil surfaces based upon its estimated vapor pressure. Approximately 60% of sodium lauryl sulfate, present at 10 mg/kg, was mineralized in a creosote-contaminated sandy loam soil in 10 days. If released into water, sodium lauryl sulfate is expected to adsorb to suspended solids and sediment in water based upon the estimated Koc. Approximately 80% of the initial concentration (approximately 25 ppm) of sodium lauryl sulfate was biodegraded in four samples of surface water in 50-140 hours, depending upon the season in which the samples were collected and inoculum source. Volatilization from water surfaces is not expected to be an important fate process based upon this compound's water solubility and that it is a salt. An estimated BCF of 71 suggests the potential for bioconcentration in aquatic organisms is moderate. Hydrolysis of sodium lauryl sulfate is not expected to occur due to the lack of hydrolyzable functional groups. Occupational exposure to sodium lauryl sulfate may occur through inhalation of dust particles and dermal contact with this compound at workplaces where sodium lauryl sulfate is produced or used. The general population may be exposed through the use of food additives and other consumer products such as detergents, shampoos, and toothpaste products containing this compound. (SRC)

PEER REVIEWED

Probable Routes of Human Exposure:

Occupational exposure to sodium lauryl sulfate may occur through inhalation of dust particles and dermal contact with this compound at workplaces where sodium lauryl sulfate is produced or used(1). The general population may be exposed through the use of food additives and other consumer products such as detergents, shampoos, and toothpaste products containing this compound(SRC).

[(1) Painter HA; pp. 1-88 in The Handbook of Environmental Chemistry, Vol 3, Part F, Anthropogenic Compounds, Detergents; Hutzinger O, ed, Heidelberg, Berlin: Springer Verlag (1992)]**PEER REVIEWED**

Artificial Pollution Sources:

Sodium lauryl sulfate's production and use as a surfactant(1) may result in its release to the environment through various waste streams(SRC).

[(1) Wagner JD et al; Kirk-Othmer Encycl Chem Technol. 4th. NY, NY: Wiley 1: 886 (1992)]**PEER REVIEWED**

Environmental Fate:

TERRESTRIAL FATE: Based on a classification scheme(1), an estimated Koc value of 1.0×10^4 (SRC), determined from a structure estimation method(2), indicates that sodium lauryl sulfate is expected to be immobile in soil(SRC). Volatilization of sodium lauryl sulfate from moist soil surfaces is not expected to be an

important fate process(SRC) as it is a salt and has a water solubility of 1.0×10^{-5} mg/l(4). Sodium lauryl sulfate is not expected to volatilize from dry soil surfaces(SRC) based upon an estimated vapor pressure of 4.7×10^{-13} mm Hg(3).

[(1) Swann RL et al; Res Rev 85: 17-28 (1983) (2) Meylan WM et al; Environ Sci Technol 1560-67 (1992) (3) Neely WB, Blau GE; Environmental Exposure from Chemicals Vol I Boca Raton, FL, CRC Press (1985) (4) Singer MM, Tjeerdema RS; Rev Environ Contam Toxicol 133: 95-149 (1993)]**PEER REVIEWED**

AQUATIC FATE: Based on a classification scheme(1), an estimated Koc value of 1.0×10^4 (SRC), determined from an estimation method(2), indicates that sodium lauryl sulfate is expected to adsorb to suspended solids and sediment in water(SRC). Volatilization from water surfaces is not expected(3) based upon a water solubility, 1.0×10^{-5} mg/l(4) and that it is a salt. According to a classification scheme(5), an estimated BCF of 71(SRC), from its log Kow of 1.6(6) and a regression-derived equation(7), suggests the potential for bioconcentration in aquatic organisms is moderate.

[(1) Swann RL et al; Res Rev 85: 17-28 (1983) (2) Meylan WM et al; Environ Sci Technol 1560-67 (1992) (3) Lyman WJ et al; Handbook of Chemical Property Estimation Methods. Washington, DC: Amer Chem Soc pp. 4-9, 2-1 to 2-52 (1990) (4) Singer MM, Tjeerdema RS; Environ Contam Toxicol 133: 95-149 (1993) (5) Franke C et al; Chemosphere 29: 1501-14 (1994) (6) Hansch C et al; Exploring QSAR. Hydrophobic, Electronic, and Steric Constants. ACS Prof Ref Book. Heller SR, consult. ed., Washington, DC: Amer Chem Soc p. 107 (1995) (7) Meylan WM et al; Environ Toxicol Chem 18: 664-72 (1999)]**PEER REVIEWED**

ATMOSPHERIC FATE: According to a model of gas/particle partitioning of semivolatile organic compounds in the atmosphere(1), sodium lauryl sulfate, which has an estimated vapor pressure of 4.7×10^{-13} mm Hg at 25 deg C(2), is expected to exist solely in the particulate phase in the ambient atmosphere. Particulate-phase sodium lauryl sulfate may be removed from the air by wet and dry deposition(SRC).

[(1) Bidleman TF; Environ Sci Technol 22: 361-367 (1988) (2) Neely WB, Blau GE; Environmental Exposure from Chemicals Vol I Boca Raton, FL: CRC Press (1985)]**PEER REVIEWED**

Environmental Biodegradation:

AEROBIC: Sodium lauryl sulfate, present at 100 mg/l, reached 85% of its theoretical BOD in 2 weeks using an activated sludge inoculum at 30 mg/l and the Japanese MITI test(1). In 10 days, approximately 60% of sodium lauryl sulfate, present at 10 mg/kg, was mineralized in a creosote-contaminated sandy loam soil; the rate of biodegradation decreased slightly at higher concentrations(2). The biodegradation of sodium lauryl sulfate varied considerably in river water samples collected from four locations of a polluted river at two times(3). The time to removal of approximately 80% of the initial concentration (approximately 25 ppm) of sodium lauryl sulfate ranged from 50-140 hours depending upon the season in which the samples were collected and the inoculum source(3).

[(1) Chemicals Inspection and Testing Institute; Biodegradation and bioaccumulation data of existing chemicals based on the CSDL Japan. Japan Chemical Industry Ecology - Toxicology and Information Center. ISBN 4-89074-101-1 (1992) (2) Deschenes L et al; Sci J 40: 471-484 (1995) (3) Anderson DJ et al; Appl Environ Microbiol 56: 758-63 (1990)]**PEER REVIEWED**

ANAEROBIC: Anaerobic degradation of sodium lauryl sulfate, using anoxic sludge from a wastewater treatment plant and a polluted river as the inoculum, has been observed but was not quantified(1).

[(1) Wagener S, Schink B; Wat Res 21: 615-622 (1987)]**PEER REVIEWED**

Environmental Abiotic Degradation:

Sodium lauryl sulfate is not expected to undergo hydrolysis in the environment due to the lack of hydrolyzable

functional groups(1).

[(1) Lyman WJ et al; Handbook of Chemical Property Estimation Methods. Washington, DC: Amer Chem Soc pp. 7-4, 7-5 (1990)]**PEER REVIEWED**

Environmental Bioconcentration:

An estimated BCF of 71 was calculated for sodium lauryl sulfate(SRC), using a log Kow of 1.6(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is moderate.

[(1) Hansch C et al; Exploring QSAR. Hydrophobic, Electronic, and Steric Constants. ACS Prof Ref Book. Heller SR, consult. ed., Washington, DC: Amer Chem Soc p. 76 (1995) (2) Meylan WM et al; Environ Toxicol Chem 18: 664-72 (1999) (3) Franke C et al; Chemosphere 29: 1501-14 (1994)]**PEER REVIEWED**

Soil Adsorption/Mobility:

Using a structure estimation method based on molecular connectivity indices(1), the Koc for sodium lauryl sulfate can be estimated to be 1.0×10^4 (SRC). According to a classification scheme(2), this estimated Koc value suggests that sodium lauryl sulfate is expected to be immobile in soil.

[(1) Meylan WM et al; Environ Sci Technol 26: 1560-67 (1992) (2) Swann RL et al; Res Rev 85: 17-28 (1983)]**PEER REVIEWED**

Volatilization from Water/Soil:

Sodium lauryl sulfate is a salt and has a water solubility of 1.0×10^5 mg/l(2) which indicates that sodium lauryl sulfate is expected to be essentially nonvolatile from water and moist surfaces(3). Sodium lauryl sulfate is not expected to volatilize from dry soil surfaces(SRC) based upon an estimated vapor pressure of 4.7×10^{-13} mm Hg(1).

[(1) Neely WB, Blau GE; Environmental Exposure from Chemicals Vol I Boca Raton, FL: CRC Press (1985) (2) Singer MM, Tjeerdema RS; Rev Environ Contam Toxicol 133: 95-149 (1993) (3) Lyman WJ et al; Handbook of Chemical Property Estimation Methods. Washington, DC: Chem Soc pp. 2-1 to 2-52 (1990)]**PEER REVIEWED**

Environmental Water Concentrations:

SURFACE WATER: Sodium lauryl sulfate was detected in 96 of 96 surface water samples collected from 12 locations in Lake Kojima in Japan between May-December, 1993 at concentrations ranging from 71 to 472 ug/l, with an average concentration of 170 ug/l(1).

[(1) Muramoto S et al; J Environ Sci Health A31: 721-729 (1996)]**PEER REVIEWED**

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Environmental Standards & Regulations:

FDA Requirements:

Coatings may be applied to fresh citrus fruit for protection of the fruit in accordance with the following conditions: (a) the coating is applied in the minimum amount required to accomplish the intended effect and (b) the coating may be formulated from /sodium lauryl sulfate/ ... used in the minimum quantity required to accomplish the intended effect. Limitation: complying with 172.822. As a film former.

[21 CFR 172.210 (4/1/99)]**PEER REVIEWED**

The food additive sodium lauryl sulfate may be safely used in food in accordance with the following conditions: (a)the additive meets the following specifications: 1. It is a mixture of sodium alkyl sulfates consisting chiefly of sodium lauryl sulfate and 2. it has a minimum content of 90% sodium alkyl sulfates. It is used or intended for use: 1. As an emulsifier in or with egg whites whereby the additive does not exceed the following limits: egg white solids, 1000 ppm; frozen egg whites, 125 ppm; and liquid egg whites, 125 ppm. 2. As a whipping agent at a level not to exceed 0.5% by weight of gelatine used in the preparation of marshmallows. 3. As a surfactant in fumaric acid-acidulated dry beverage base whereby the additive does not exceed 25 ppm of the finished beverage and such beverage base in not for use in a food for which a standard of identity established under section 401 of the Act precludes such use. As a surfactant in fumaric acid-acidulated fruit juice drinks whereby the additive does not exceed 25 ppm of the finished fruit juice drink and it is not used in a fruit juice drink for which a standard of identity established under section 401 of the Act precludes such use. 4. As a wetting agent at a level not to exceed 10 ppm in the partition of high and low melting fractions of crude vegetable oils and animal fats, provided that the partition step is followed by a conventional refining process that includes alkali neutralization and deodorization of the fats and oils.

[21 CFR 172.822 (4/1/99)]**PEER REVIEWED**

Sodium lauryl sulfate is an indirect food additive for use as a component of resinous and polymeric coatings.

[21 CFR 175.300 (4/1/99)]**PEER REVIEWED**

Sodium lauryl sulfate is an indirect food additive for use as a component of resinous and polymeric coatings for polyolefin films.

[21 CFR 175.320 (4/1/99)]**PEER REVIEWED**

SODIUM LAURYL SULFATE

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*For other data, click on the Table of Contents***Chemical/Physical Properties:****Molecular Formula:**

C12-H26-O4-S.Na

PEER REVIEWED

Molecular Weight:

288.38

[Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996. 1478]**PEER REVIEWED**

Color/Form:

White or cream-colored crystals, flakes, or powder

[Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996. 1478]**PEER REVIEWED**

Odor:

Faint odor of fatty substances

[Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996. 1478]**PEER REVIEWED**

Octanol/Water Partition Coefficient:

log Kow = 1.60

[Hansch, C., Leo, A., D. Hoekman. Exploring QSAR - Hydrophobic, Electronic, and Steric Constants. Washington, DC: American Chemical Society., 1995. 107]**PEER REVIEWED**

Solubilities:

1 g dissolves in 10 ml water, an opalescent solution

[Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996. 1478]**PEER REVIEWED**

In water, 1.00X10+5 mg/l (temp not specified)

[Singer MM, Tjeerdema RS; Rev Environ Contam Toxicol 133: 95-149 (1993)]**PEER REVIEWED**

Spectral Properties:

INDEX OF REFRACTION: 1.461 (ALPHA), 1.491 (GAMMA)

[Sunshine, I. (ed.). CRC Handbook of Analytical Toxicology. Cleveland: The Chemical Co., 1969. 323]**PEER REVIEWED**

Surface Tension:

39.5 dyn/cm at 25 deg C

[Kirk-Othmer Encyclopedia of Chemical Technology. 4th ed. Volumes 1: New York, NY. John Wiley and Sons, 1991-Present.,p. V7 (92) 936]**PEER REVIEWED**

Other Chemical/Physical Properties:

Lowers the surface tension of aq solutions; emulsifies fats

[Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996. 1478]**PEER REVIEWED**

Smooth feel, neutral reaction

[Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996. 1478]**PEER REVIEWED**

SODIUM LAURYL SULFATE

CASRN: 151-21-3

For other data, click on the Table of Contents

Chemical Safety & Handling:

Hazardous Decomposition:

When heated to decomposition it emits toxic fumes of (sulfur oxides and sodium oxides).

[Lewis, R.J. Sax's Dangerous Properties of Industrial Materials. 9th ed. Volumes 1-3. New York, NY: Van Nostrand Reinhold, 1996. 2974]**PEER REVIEWED**

Disposal Methods:

SRP: At the time of review, criteria for land treatment or burial (sanitary landfill) disposal practices are subject to significant revision. Prior to implementing land disposal of waste residue (including waste sludge), consult with environmental regulatory agencies for guidance on acceptable disposal practices.

PEER REVIEWED

SODIUM LAURYL SULFATE

CASRN: 151-21-3

*For other data, click on the Table of Contents***Manufacturing/Use Information:****Major Uses:**

SURFACE-ACTIVE AGENT FOR EMULSION POLYMERIZATION, IN METAL PROCESSING, DETERGENTS & SHAMPOO; EMULSIFYING, FOAMING, WETTING, DISPERSING AGENT IN CREAMS, LOTION & MEDICAL PREPARATIONS; FOAMING, WETTING & DISPERSING AGENT IN TOOTHPASTE; EMULSIFIER, WHIPPING AGENT & SURFACTANT IN FOODS

[SRI]**PEER REVIEWED**

MEDICATION

PEER REVIEWED

Used in shampoos, hairdyes, toothpastes, hand dishwashing detergents; used in many cleaning compounds because of cleaning ability, mildness and foaming capability.

[Kirk-Othmer Encyclopedia of Chemical Technology. 4th ed. Volumes 1: New York, NY. John Wiley and Sons, 1991-Present.,p. V1 (92) 886]**PEER REVIEWED**

Used in the preparation of blood samples for red blood cell counts

[Kirk-Othmer Encyclopedia of Chemical Technology. 4th ed. Volumes 1: New York, NY. John Wiley and Sons, 1991-Present.,p. V3 (92) 779]**PEER REVIEWED**

Used in electrophoretic separation and molecular weight estimation of proteins; wetting agent, detergent, especially in the textile industry

[Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996. 1478]**PEER REVIEWED**

Used as a cleansing agent in cosmetics

[Kirk-Othmer Encyclopedia of Chemical Technology. 4th ed. Volumes 1: New York, NY. John Wiley and Sons, 1991-Present.,p. V7 (92) 582]**PEER REVIEWED**

Used as a whipping aid in dried egg products

[Kirk-Othmer Encyclopedia of Chemical Technology. 4th ed. Volumes 1: New York, NY. John Wiley and Sons, 1991-Present.,p. V7 (92) 900]**PEER REVIEWED**

Used in the preparation of samples for dietary fiber content

[Kirk-Othmer Encyclopedia of Chemical Technology. 4th ed. Volumes 1: New York, NY. John Wiley and Sons, 1991-Present.,p. V7 (92) 142]**PEER REVIEWED**

Used in the characterization of quaternary ammonium compounds

[Kirk-Othmer Encyclopedia of Chemical Technology. 4th ed. Volumes 1: New York, NY. John Wiley and Sons, 1991-Present.,p. V20 (92) 749]**PEER REVIEWED**

Food additive (emulsifier and thickener)

[Lewis, R.J., Sr (Ed.). Hawley's Condensed Chemical Dictionary. 13th ed. New York, NY: John Wiley & Sons, Inc. 1997. 1020]**PEER REVIEWED**

Used in the electroplating industry, particularly nickel and zinc; as an emulsifier, wetting agent and adjuvant in

insecticides; as an emulsifier and penetrant in varnish and paint remover; in the formulation of injection-molded explosives; anti-foaming agent in solid rocket propellants; as a model surfactant and reference toxicant in aquatic and mammalian toxicological testing.

[Singer MM, Tjeerdema RS; Rev Environ Contam Toxicol 133: 95-149 (1993)]**PEER REVIEWED**

Manufacturers:

Albright and Wilson Americas Inc., Hq, 4851 Lake Brook Drive, Glen Allen, VA 23060, (804) 968-6300;
Production site: Blue Island, IL 60406

[SRI. 1999 Directory of Chemical Producers -United States. Menlo Park, CA. SRI Consulting 1999.. 908]**PEER REVIEWED**

Emkay Chemical Company, 319 Second St., Elizabeth, NJ 07206, (908) 352-7053; Production site: Elizabeth, NJ 07206

[SRI. 1999 Directory of Chemical Producers -United States. Menlo Park, CA. SRI Consulting 1999.. 908]**PEER REVIEWED**

Henkel Corp., The Triad, Suite 200, 2200 Renaissance Blvd., Gulph Mills, PA 19406, (610) 270-8100;
Production site: Hoboken, NJ 07030

[SRI. 1999 Directory of Chemical Producers -United States. Menlo Park, CA. SRI Consulting 1999.. 908]**PEER REVIEWED**

Rhodia Inc., CN 7500 Prospect Plains Road, Cranbury, NJ 08512-7500, (609) 860-4000; Production site: Baltimore, MD 21226

[SRI. 1999 Directory of Chemical Producers -United States. Menlo Park, CA. SRI Consulting 1999.. 908]**PEER REVIEWED**

Stepan Co., 22 West Frontage Rd., Northfield, IL 60093, (847) 446-7500; Production site not specified

[SRI. 1999 Directory of Chemical Producers -United States. Menlo Park, CA. SRI Consulting 1999.. 908]**PEER REVIEWED**

Witco Corp., One American Way, Greenwich, CT 06831, (203) 552-2000; Subsidiary: Oleochemicals and Derivatives Group, One American Way, Greenwich, CT 06831; Production site: Sante Fe Springs, CA 90670

[SRI. 1999 Directory of Chemical Producers -United States. Menlo Park, CA. SRI Consulting 1999.. 908]**PEER REVIEWED**

Methods of Manufacturing:

SULFATION OF LAURYL ALCOHOL, FOLLOWED BY NEUTRALIZATION WITH SODIUM HYDROXIDE

[SRI]**PEER REVIEWED**

Sulfation of lauryl alcohol, followed by neutralization with sodium carbonate

[Budavari, S. (ed.). The Merck Index: An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996. 1478]**PEER REVIEWED**

General Manufacturing Information:

MEDICAMENTS SUCH AS COAL TAR SOLN OR RESORCINOL MAY BE ADDED TO SOLN OF SODIUM LAURYL SULFATE TO PRODUCE STIMULATING ANTISEPTIC SHAMPOO. RESORCIN GIVES GREENISH TINT TO LIGHT OR GREY HAIR BUT COAL TAR SOLN DOES NOT.

[American Hospital Formulary Service. Volumes I and II. Washington, DC: American Society of Hospital Pharmacists, to 1984., p. 84:20]**PEER REVIEWED**

INCOMPATIBILITIES: REACTS WITH CATIONIC SURFACE-ACTIVE AGENTS WITH LOSS OF ACTIVITY, EVEN IN CONC'N TOO LOW TO CAUSE PPTN. UNLIKE SOAPS, IT IS COMPATIBLE WITH DILUTE ACIDS, & CALCIUM & MAGNESIUM IONS.

[Osol, A. and J.E. Hoover, et al. (eds.). Remington's Pharmaceutical Sciences. 15th ed. Easton, Pennsylvania: Mack Publishing Co., 1975. 1245]**PEER REVIEWED**

VET: FOOT & MOUTH DISEASE VIRUS IS HIGHLY RESISTANT TO.../SODIUM LAURYL SULFATE/, YET TGE VIRUS IS SENSITIVE... FUNGISTATIC (INCL CANDIDA & TRICHOPHYTON SPP) & CONC'N OF 2% & OVER ELIMINATED DRUG RESISTANCE & SEX TRANSFER FACTORS IN E COLI. INHIBITS GROWTH OF MANY G-POS BACTERIA...INEFFECTIVE AGAINST G-NEG TYPES.

[Rossoff, I.S. Handbook of Veterinary Drugs. New York: Springer Publishing Company, 1974. 542]**PEER REVIEWED**

...ANIONIC WETTING AGENT WHICH IS USED AS DETERGENT, ALONE OR IN MEDICATED SHAMPOOS, & AS SKIN CLEANSER. IT IS BACTERIOSTATIC TOWARD GRAM POSITIVE BUT NOT GRAM NEGATIVE ORGANISMS. ...USED AS SOAP SUBSTITUTE.

[American Hospital Formulary Service. Volumes I and II. Washington, DC: American Society of Hospital Pharmacists, to 1984., p. 84:20]**PEER REVIEWED**

...SODIUM LAURYL SULFATE...DISPERSING AGENTS COMMONLY PRESENT IN LOTIONS, CREAMS, & OINTMENTS CONTAINING OILY INGREDIENTS & WATER.

[American Medical Association, AMA Department of Drugs, AMA Drug Evaluations. 3rd ed. Littleton, Massachusetts: PSG Publishing Co., Inc., 1977. 896]**PEER REVIEWED**

EMULSIFYING, DETERGENT, & WETTING AGENT IN OINTMENTS, TOOTH POWDERS, & OTHER PHARMACEUTICAL PREPN, & IN METAL, PAPER, & PIGMENT INDUSTRIES.

[Osol, A. and J.E. Hoover, et al. (eds.). Remington's Pharmaceutical Sciences. 15th ed. Easton, Pennsylvania: Mack Publishing Co., 1975. 1245]**PEER REVIEWED**

VET: AS WETTING AGENT FOR SOME ANTIBIOTICS & ANTIMICROBIALS (TYLOSIN, SULFAQUINOXALINE, TYROTHRIN, ETC) FOR ORAL & TOPICAL USE. WIDELY USED IN OINTMENT BASES & AS WETTING AGENT FOR SOME INSECTICIDES & ANTHELMINTICS. ALSO USEFUL IN PRODUCING CLEAR GEL SHAMPOOS.

[Rossoff, I.S. Handbook of Veterinary Drugs. New York: Springer Publishing Company, 1974. 542]**PEER REVIEWED**

Formulations/Preparations:

SODIUM LAURYL SULFATE USP: SOLUTION 20%; SOLUTION 20%, WITH COAL TAR SOLUTION 10%; SOLUTION 20%, WITH RESORCINOL 10%.

[American Hospital Formulary Service. Volumes I and II. Washington, DC: American Society of Hospital Pharmacists, to 1984., p. 84:20]**PEER REVIEWED**

SODIUM MONODODECYL SULFATE...MIXT OF SODIUM ALKYL SULFATES CONSISTING CHIEFLY OF SODIUM LAURYL SULFATE. COMBINED CONTENT OF SODIUM CHLORIDE & SODIUM SULFATE IS NOT MORE THAN 8%.

[Osol, A. and J.E. Hoover, et al. (eds.). Remington's Pharmaceutical Sciences. 15th ed. Easton, Pennsylvania: Mack Publishing Co., 1975. 1245]**PEER REVIEWED**

THE ARTICLE OF COMMERCE IS A MIXTURE OF ANALOGOUS SODIUM ALKYL SULFATES WITH SODIUM LAURYL SULFATE PREDOMINATING.

[The Merck Index. 9th ed. Rahway, New Jersey: Merck & Co., Inc., 1976. 1116]**PEER REVIEWED**

Grades: USP; Technical; FCC.

[Lewis, R.J., Sr (Ed.). Hawley's Condensed Chemical Dictionary. 13th ed. New York, NY: John Wiley & Sons, Inc. 1997. 1020]**PEER REVIEWED**

U. S. Production:

(1972) 1.22X10+10 GRAMS

[SRI]**PEER REVIEWED**

(1975) 7.66X10+9 GRAMS

[SRI]**PEER REVIEWED**

SODIUM LAURYL SULFATE

CASRN: 151-21-3

For other data, click on the Table of Contents

Laboratory Methods:

Clinical Laboratory Methods:

ANALYTICAL PROCEDURES ARE DESCRIBED FOR DETERMINING RESIDUES OF SODIUM DODECYL SULFATE IN WHOLE BLOOD FROM GUINEA PIGS. METHODS ARE BASED ON HYDROLYSIS & ANALYSIS BY ELECTRON-CAPTURE GAS-CHROMATOGRAPHY.

[BLAKEMORE WM ET AL; TOXICOL LETT (AMST) 3 (3): 127 (1979)]**PEER REVIEWED**

Analytic Laboratory Methods:

AOAC Method 968.18. Sodium lauryl sulfate in egg white. Colorimetric method

[Association of Official Analytical Chemists. Official Methods of Analysis. 15th ed. and Supplements. Washington, DC: Association of Analytical Chemists, 1990,p. V2 1163]**PEER REVIEWED**

A method is described for determining the concentration of total alkyl sulfates in surface water and wastewater samples. The detection limit is reported as <5 ug/l.

[Fendinger NJ et al; Environ Sci Technol 26: 2493-2498 (1992)]**PEER REVIEWED**

SODIUM LAURYL SULFATE

CASRN: 151-21-3

For other data, click on the Table of Contents

Synonyms and Identifiers:

Synonyms:

AQUAREX ME

PEER REVIEWED

AQUAREX METHYL

PEER REVIEWED

CARSONOL SLS

PEER REVIEWED

DEHYDRAG SULFATE GL EMULSION

PEER REVIEWED

DODECYL ALCOHOL, HYDROGEN SULFATE, SODIUM SALT

PEER REVIEWED

DODECYL SODIUM SULFATE

PEER REVIEWED

DODECYL SULFATE, SODIUM SALT

PEER REVIEWED

DREFT

PEER REVIEWED

DUPONAL

PEER REVIEWED

DUPONAL WAQE

PEER REVIEWED

DUPONOL C

PEER REVIEWED

DUPONOL ME

PEER REVIEWED

DUPONOL METHYL

PEER REVIEWED

DUPONOL WA

PEER REVIEWED

DUPONOL WAQ

PEER REVIEWED

EMAL 10
PEER REVIEWED

IRIUM
PEER REVIEWED

LANETTE WAX-S
PEER REVIEWED

LAURYL SODIUM SULFATE
PEER REVIEWED

LAURYL SULFATE SODIUM SALT
PEER REVIEWED

MAPROFIX 563
PEER REVIEWED

MAPROFIX NEU
PEER REVIEWED

MAPROFIX WAC
PEER REVIEWED

MAPROFIX WAC-LA
PEER REVIEWED

MONAGEN Y 100
PEER REVIEWED

NCI-C50191
PEER REVIEWED

NEUTRAZYME
PEER REVIEWED

ORVUS WA PASTE
PEER REVIEWED

PERKLANKROL ESD 60
PEER REVIEWED

PERLANKROL L
PEER REVIEWED

QUOLAC EX-UB
PEER REVIEWED

SDS
PEER REVIEWED

SIPEX OP

PEER REVIEWED

SIPON PD

PEER REVIEWED

SIPON WD

PEER REVIEWED

SODIUM DODECYLSULFATE

PEER REVIEWED

SODIUM N-DODECYL SULFATE

PEER REVIEWED

SODIUM DODECYL SULPHATE

PEER REVIEWED

SODIUM LAURYL SULPHATE

PEER REVIEWED

SOLSOL NEEDLES

PEER REVIEWED

STEPANOL T 28

PEER REVIEWED

STEPANOL ME

PEER REVIEWED

STEPANOL ME DRY AW

PEER REVIEWED

STEPANOL METHYL

PEER REVIEWED

STEPANOL METHYL DRY AW

PEER REVIEWED

SULFURIC ACID, MONODODECYL ESTER, SODIUM SALT

PEER REVIEWED

TARAPON K 12

PEER REVIEWED

TEXAPON K12

PEER REVIEWED

TREPENOL WA

PEER REVIEWED

Formulations/Preparations:

SODIUM LAURYL SULFATE USP: SOLUTION 20%; SOLUTION 20%, WITH COAL TAR SOLUTION 10%; SOLUTION 20%, WITH RESORCINOL 10%.

[American Hospital Formulary Service. Volumes I and II. Washington, DC: American Society of Hospital Pharmacists, to 1984.,p. 84:20]**PEER REVIEWED**

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[Osol, A. and J.E. Hoover, et al. (eds.). Remington's Pharmaceutical Sciences. 15th ed. Easton, Pennsylvania: Mack Publishing Co., 1975. 1245]**PEER REVIEWED**

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[The Merck Index. 9th ed. Rahway, New Jersey: Merck & Co., Inc., 1976. 1116]**PEER REVIEWED**

Grades: USP; Technical; FCC.

[Lewis, R.J., Sr (Ed.). Hawley's Condensed Chemical Dictionary. 13th ed. New York, NY: John Wiley & Sons, Inc. 1997. 1020]**PEER REVIEWED**

SODIUM LAURYL SULFATE

CASRN: 151-21-3

For other data, click on the Table of Contents

Administrative Information:

Hazardous Substances Databank Number: 1315

Last Revision Date: 20021108

Last Review Date: Reviewed by SRP on 1/29/2000

Update History:

Complete Update on 11/08/2002, 1 field added/edited/deleted.
Complete Update on 08/06/2002, 1 field added/edited/deleted.
Complete Update on 08/09/2001, 1 field added/edited/deleted.
Complete Update on 05/21/2000, 40 fields added/edited/deleted.
Field Update on 08/26/1999, 1 field added/edited/deleted.
Complete Update on 03/13/1998, 3 fields added/edited/deleted.
Field Update on 10/20/1997, 1 field added/edited/deleted.
Field Update on 05/01/1997, 2 fields added/edited/deleted.
Complete Update on 01/21/1996, 1 field added/edited/deleted.
Complete Update on 11/10/1995, 1 field added/edited/deleted.
Complete Update on 12/22/1994, 1 field added/edited/deleted.
Complete Update on 10/27/1994, 2 fields added/edited/deleted.
Complete Update on 03/25/1994, 1 field added/edited/deleted.
Field update on 12/20/1992, 1 field added/edited/deleted.
Complete Update on 10/02/1990, 2 fields added/edited/deleted.
Complete Update on 09/23/1988, 1 field added/edited/deleted.
Complete Update on 02/02/1987, 32 fields added/edited/deleted.

Record Length: 56132

Search Results

| | | |
|---|---|--|
| <input checked="" type="checkbox"/> Assemble Document | <input checked="" type="checkbox"/> Click here to perform a comprehensive search and view | <input checked="" type="checkbox"/> Return to last Search Screen |
|---|---|--|

DODECYL SULFATE, SODIUM SALT

CHRIS - Chemical Hazard Response Information System

Developed by the United States Coast Guard. 1985-2004.

Document Outline

- 0. OVERVIEW
- 1. CORRECTIVE RESPONSE ACTIONS
- 2. CHEMICAL DESIGNATIONS
- 3. HEALTH HAZARDS
- 4. FIRE HAZARDS
- 5. CHEMICAL REACTIVITY
- 6. WATER POLLUTION
- 7. SHIPPING INFORMATION
- 8. HAZARD CLASSIFICATIONS
- 9. PHYSICAL AND CHEMICAL PROPERTIES

0. OVERVIEW

Material name

DODECYL SULFATE, SODIUM SALT
CHRIS Code DDS

Common synonyms

Sodium lauryl sulfate
Lauryl sodium sulfate
Sodium dodecyl sulfate
Lauryl sulfate, sodium salt

Characteristics

Solid paste or liquid White to pale yellow Mild odor
Sinks and mixes with water.

Emergency Actions

Keep people away. Avoid contact with solid and dust.
Notify local health and pollution control agencies.

Fire

Not flammable.

Exposure

CALL FOR MEDICAL AID.

DUST

Irritating to eyes, nose and throat.

If inhaled will cause coughing.

If in eyes, hold eyelids open and flush with plenty of water.

If breathing has stopped, give artificial respiration.

If breathing is difficult, give oxygen.

SOLID OR LIQUID

Will burn eyes.

Irritating to eyes.

If swallowed will cause nausea and vomiting.

Remove contaminated clothing and shoes.

Flush affected areas with plenty of water.

IF IN EYES, hold eyelids open and flush with plenty of water.

IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.

Water Pollution - General

Effect of low concentrations on aquatic life is unknown.

May be dangerous if it enters water intakes.

Notify local health and wildlife officials.

Notify operators of nearby water intakes.

1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse

Stop discharge

2. CHEMICAL DESIGNATIONS

CG Compatibility Group: Not listed.

Formula: $C^{12}H^{25}OSO^3Na$

IMO/UN Designation: Not listed

DOT ID Number: Not listed

CAS Registry Number: 151-21-3

NAERG Guide Number: Not listed

Standard Industrial Trade Classification: 51549

3. HEALTH HAZARDS

Personal Protective Equipment: Protective gloves; dust mask or face shield

Symptoms Following Exposure: Inhalation of dust causes sneezing and coughing. Ingestion of large amounts causes irritation of stomach. Dust irritates eyes and may cause burns on prolonged contact. Contact with skin causes some irritation; continued exposure to water solution causes drying out and cracking.

Treatment of Exposure: INHALATION: remove from exposure. INGESTION: consult a doctor if large amounts have been ingested. EYES: flush well with water; consult doctor if irritation persists. SKIN: flush with water.

TLV-TWA: Not listed.

TLV-STEL: Not listed.

TLV-Ceiling: Not listed.

Toxicity by Ingestion: Grade 2; oral LD⁵⁰ = 1 g/kg (rat)

Toxicity by Inhalation: Currently not available.

Chronic Toxicity: Currently not available

Vapor (Gas) Irritant Characteristics: Currently not available

Liquid or Solid Irritant Characteristics: Currently not available

Odor Threshold: Currently not available

IDLH Value: Not listed.

OSHA PEL-TWA: Not listed.

OSHA PEL-STEL: Not listed.

OSHA PEL Ceiling: Not listed.

EPA AEGL: Not listed.

4. FIRE HAZARDS

Flash Point: Not flammable

Flammable Limits in Air: Not flammable

Fire Extinguishing Agents: Not pertinent

Fire Extinguishing Agents NOT to Be Used: Not pertinent

Special Hazards of Combustion Products: Currently not available

Behavior in Fire: Currently not available

Ignition Temperature: Not pertinent

Electrical Hazard: Not pertinent

Burning Rate: Not pertinent

Adiabatic Flame Temperature: Currently not available

Stoichiometric Air to Fuel Ratio: Not pertinent

Flame Temperature: Currently not available

Combustion Molar Ratio (Reactant to Product): Not pertinent

5. CHEMICAL REACTIVITY

Reactivity with Water: No reaction

Reactivity with Common Materials: Currently not available

Stability During Transport: Stable

Neutralizing Agents for Acids and Caustics: Not pertinent

Polymerization: Not pertinent

Inhibitor of Polymerization: Not pertinent

6. WATER POLLUTION

Aquatic Toxicity: 5.8 ppm/24 hr/plaice/LC⁵⁰

Waterfowl Toxicity: Currently not available

Biological Oxygen Demand (BOD): 99% of theoretical in 5 days

Food Chain Concentration Potential: None

GESAMP Hazard Profile:

MATERIAL SAFETY DATA SHEET
SOUTHERN CHEMICAL & TEXTILES, INC.
653 PEEK ROAD - P.O. BOX 1511
DALTON, GEORGIA 30722

EMERGENCY TELEPHONE NUMBER - 706-277-3993

APPROVED BY TRUMAN WHALEY

DATE REVISED 8/28/02

SECTION I - PRODUCT DATA

TRADE NAME SCT-535
CHEMICAL NAME SODIUM LAURYL SULFATE
PRODUCT CLASS SURFACTANT

SECTION II - PHYSICAL DATA

| | | |
|--|--|--|
| <u>BOILING POINT (DEGREES F.)</u> 212 | <u>EVAPORATION RATE WATER = 1</u> 1 | <u>% VOLATILE BY WEIGHT</u> ~70 |
| <u>VAPOR DENSITY (AIR = 1)</u> NA | <u>VAPOR PRESSURE (MM HG)</u> NA | <u>DENSITY (WT/GAL)</u> ~8.6 LBS. |

NA - NON APPLICABLE

NE - NOT ESTABLISHED

SECTION III - HAZARDOUS INGREDIENTS

| <u>CHEMICAL %</u> | <u>CAS#</u> | <u>ACGIH TWA/PPM</u> | <u>OSHA TWA/PPM</u> | <u>CARCINOGEN YES/NO</u> |
|-------------------|-------------|--------------------------|-------------------------|------------------------------|
| NONE | | | | NO |

SECTION IV - HMIS

(MINIMAL - EXTREME)

(0 - 4)

HEALTH

0

FIRE

0

REACTIVITY

0

SECTION V - HEALTH HAZARDS DATA

EFFECTS OF OVEREXPOSURE:

CONTACT WITH EYES MAY BE PAINFUL AND IRRITATING. PROLONGED OR REPEATED CONTACT WITH SKIN MAY CAUSE IRRITATION. MIST CAUSED BY MANUFACTURING OPERATIONS MAY IRRITATE NASAL PASSAGES.

EMERGENCY AND FIRST-AID PRECAUTIONS:

FLUSH EYES IMMEDIATELY WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. WASH OFF SKIN AND REMOVE CONTAMINATED CLOTHING. IF VAPORS OR MIST CAUSE IRRITATION OR DISTRESS, GO TO FRESH AIR. GIVE OXYGEN OR APPLY ARTIFICIAL RESPIRATION IF NEEDED. IF ANY SYMPTOMS PERSIST CONSULT A PHYSICIAN.

DO NOT INGEST. IF SWALLOWED, CONSULT PHYSICIAN IMMEDIATELY.

SECTION VI - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT
(DEGREES F.)

NA

FLAMMABLE LIMITS
LEL UEL

NA

EXTINGUISHING MEDIA:

SPECIAL FIRE FIGHTING PROCEDURES: NOT APPLICABLE.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING SHOULD BE WORN WHEN FIGHTING FIRES.

SECTION VII - REACTIVITY DATA

STABILITY - STABLE

HAZARDOUS POLYMERIZATION - WILL NOT OCCUR

MATERIALS TO AVOID - NONE

HAZARDOUS DECOMPOSITION PRODUCTS: SULFUR DIOXIDE AND
HYDROGEN SULFIDE

SECTION VIII - SPILL OR LEAK PROCEDURES

SOAK UP WITH ABSORBENT, SHOVEL INTO WASTE CONTAINER, FLUSH AREA WITH WATER.

WASTE DISPOSAL METHOD:

BURY, INCINERATE, OR FLUSH TO SEWAGE DISPOSAL SYSTEM IN ACCORDANCE WITH ALL LEGAL REGULATIONS.

SPECIAL PROTECTION INFORMATION

VENTILATION: USE ADEQUATE VENTILATION.

RESPIRATORY PROTECTION:

USE A NIOSH OR MESA APPROVED GAS MASK FOR AMMONIACAL VAPORS IF FUMES FROM HEATED MATERIAL ARE A PROBLEM.

PROTECTIVE EQUIPMENT:

WEAR PROTECTIVE CLOTHING TO PREVENT REPEATED OR PROLONGED CONTACT.

EYE PROTECTION:

WEAR GOGGLES OR FULL FACE SHIELD IF SPLASHING IS LIKELY.

PROTECTIVE GLOVES:

USE RUBBER OR PLASTIC GLOVES TO PREVENT PROLONGED CONTACT.

SECTION IX - SPECIAL PRECAUTIONS

HANDLING AND STORAGE: AVOID OVERHEATING OR FREEZING.

SECTION X - TRANSPORTATION

FOR DOMESTIC TRANSPORTATION PURPOSES. THESE PRODUCTS ARE NOT DEFINED OR DESIGNATED AS A HAZARDOUS MATERIAL BY THE U.S. DEPARTMENT OF TRANSPORTATION UNDER TITLE 49 OF THE CODE OF FEDERAL REGULATIONS, 1981 EDITION.

SECTION XI - REGULATORY INFORMATION

OSHA STATUS: THIS PRODUCT IS NOT HAZARDOUS UNDER THE CRITERIA OF THE OSHA STANDARD 29CFR 1910.1200

TSCA STATUS: ON TSCA INVENTORY

CERCLA REPORTABLE QUANTITY:

SARA TITLE III:

**SECTION 302 : NA
SECTION 311/312: NA
SECTION 313: NA**

STATEMENT OF RESPONSIBILITY

THIS DOCUMENT HAS BEEN PREPARED AS REQUIRED BY THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) AND THE SARA SECTION 313 OF THE EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT OF 1986 AND 40 CFR 372. WE BELIEVE ALL INFORMATION GIVEN IS ACCURATE. IT IS PRESENTED IN GOOD FAITH, BUT WITHOUT GUARANTEE. ALL RISKS ARE ASSUMED BY THE USER.

MATERIAL SAFETY DATA SHEET



1 CHEMICAL PRODUCT & COMPANY IDENTIFICATION

Trade Name **STEPANOL WAC**
Manufacturer Stepan Company
22 West Frontage Road
Northfield, IL 60093 USA

Telephone Numbers - 24 Hour Emergency Assistance
Medical 800-228-5635
Chemtrec 800-424-9300
Chemtrec Int'l 703-527-3887

Telephone Numbers - General Assistance
General (847) 446-7500

Product Class Alkyl sulfate
Product Number 0638

2 COMPOSITION / INFORMATION ON INGREDIENTS

3 HAZARDS IDENTIFICATION

Emergency Overview

May cause irritation to the eyes, skin, and respiratory system.

Health Effects: Eyes

This product may cause irritation to the eyes.

Health Effects: Skin

Prolonged and/or repeated skin contact with this product may cause irritation/dermatitis.

Health Effects: Inhalation

Inhalation of vapors or mists of the product may be irritating to the respiratory system.

4 FIRST AID MEASURES

Eyes

Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical attention at once.

Skin

For skin contact flush with large amounts of water. If irritation persists, get medical attention. Immediately take off all contaminated clothing. Wash contaminated clothing before reuse.

Inhalation

If symptoms are experienced, remove source of contamination or move victim to fresh air. If the affected person is not breathing, apply artificial respiration. If breathing is difficult, give oxygen.

Ingestion

If the material is swallowed, get immediate medical attention or advice.

5 FIRE FIGHTING MEASURES

Flash Point (> 93.9 °C), > 201 F

Extinguishing Media

Use appropriate methods for combatting the surrounding fire.

Fire Fighting Equipment / Instructions

Firefighters should wear full protective clothing including self contained breathing apparatus.

6 ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK PROCEDURES

Emergency Action:

Isolate spill or leak area immediately. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering.

Do not touch or walk through spilled material. Stop leak if you can do it without risk. Wear appropriate protective equipment during cleanup. Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Large Spills: Dike ahead of liquid spill for later disposal. Prevent entry into waterways, sewers, basements or confined areas.

Surfaces may become slippery after spillage.

7 HANDLING & STORAGE

Handling Procedures

Wash thoroughly after handling. As with all chemicals, good industrial hygiene practices should be followed when handling this material.

Storage Procedures

Avoid freezing or excessive heat.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls

Use local exhaust ventilation.

Personal Protective Equipment: Skin

Wear suitable protective clothing. Use impervious gloves.

Personal Protective Equipment: Respiratory

If vapors are present or irritation is experienced, NIOSH approved respiratory protection for organic vapors should be worn.

Personal Protective Equipment: General

Eye wash fountain and emergency showers are recommended.

9 PHYSICAL & CHEMICAL PROPERTIES

Flash Point (> 93.9 °C), > 201 F

Specific Gravity (8.6 lb/gal), 1.0337 g/ml

Percent Volatile 70 % (w/w)
Vapor Pressure Not Determined or Unknown
Vapor Density Estimated lighter than air.
Evaporation Rate Estimated slower than ethyl ether.
pH Value 7.5 - 8.5 @10%
Freezing Point (51.8 °F), 11 C

10 STABILITY & REACTIVITY

Chemical Stability

Stable under normal conditions.

Incompatibility

This product may react with strong acids or oxidizing agents.

Hazardous Decomposition

Upon decomposition, this product may yield sulfur dioxide and oxides of sulfur.

Hazardous Polymerization

Will not occur.

11 TOXICOLOGICAL INFORMATION

Carcinogenicity

No carcinogenicity data available for this product.

12 ECOLOGICAL INFORMATION

13 DISPOSAL CONSIDERATIONS

Disposal Instructions

This substance, when discarded or disposed of, is not specifically listed as a "Hazardous Waste" in the Federal regulations; however it could be characteristically hazardous if it is considered toxic, corrosive, ignitable, or reactive according to Federal definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This substance could also become a hazardous waste if it is mixed with or comes in contact with a hazardous waste. Check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations at 40 CFR 262, 263, 264, 268 and 270 apply. Chemical additions, processing or otherwise altering this material may make the material management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate.

The transportation, storage, treatment and disposal of this material must be conducted in compliance with all applicable federal, state, and local regulations.

14 TRANSPORT INFORMATION

DOT Proper Shipping Name Refer to bill of lading or container label for DOT or other transportation hazard classification, if any.

15 REGULATORY INFORMATION

Inventories

All components of this product are listed on the following inventories:U.S.A.(TSCA),

| | | | | |
|------------------------|--------------|----------------------|------------|-------------|
| Document Number | 487 | Revision Date | 12/21/2001 | Page 3 of 4 |
| Product Name | STEPANOL WAC | Version | 08 | |

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There is no calculable reportable quantity (RQ) for this product.

16 OTHER INFORMATION

Disclaimer

Disclaimer: Nothing contained herein grants or extends a license, express or implied, in connection with patents, issued or pending, of the manufacturer or others. The information contained herein is based on the manufacturer's own study and the works of others. The manufacturer makes no warranties, expressed or implied, as to the accuracy, completeness, or adequacy of the information contained herein. The manufacturer shall not be held liable (regardless of fault) to the vendee's employees, or anyone for any direct, special or consequential damages arising out of or in connection with the accuracy, completeness, adequacy or furnishing of such information.

HAZARD RATINGS HMIS

| | |
|--------------|---|
| Health | 1 |
| Flammability | 1 |
| Reactivity | 0 |
| PPE | |

| | | | |
|--------------|-----------------------------|----------------------|------------|
| Completed On | 12/21/01 | Replaces Sheet Dated | 07/13/2001 |
| Completed By | Product Safety & Compliance | | |

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May 7, 2000

PESTICIDE REGISTRATION (PR) NOTICE 2000-6

**NOTICE TO MANUFACTURERS, FORMULATORS, PRODUCERS AND
REGISTRANTS OF PESTICIDE PRODUCTS**

ATTENTION: Persons Responsible for Registration of Pesticide Products

SUBJECT: Minimum Risk Pesticides Exempted under FIFRA Section 25(b)
Clarification of Issues

I. PURPOSE

This notice clarifies several aspects of the exemption for minimum risk pesticides by the FIFRA Section 25(b) rule, including composition, labeling, food tolerances, and state regulation. It is being issued to answer questions frequently asked of EPA about such products.

II. BACKGROUND

Section 2(u) of FIFRA defines a "pesticide" as "(1) any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, (2) any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant, and (3) any nitrogen stabilizer." Except in very limited circumstances, any substance falling within this definition of a pesticide must be registered by EPA before it can be legally sold or distributed. One such exception to the registration requirement is for those pesticides that the Administrator, under section 25(b) of FIFRA, has determined "to be of a character which is unnecessary to be subject to this Act," and that have been exempted from the requirements of FIFRA by regulation.

In 1996, EPA exempted certain minimum risk pesticides from FIFRA requirements if they satisfy certain conditions. EPA exempted the products described in 40 CFR section 152.25(g) in part to reduce the cost and regulatory burdens on businesses as well as the public for pesticides posing little or no risk, and to focus EPA's limited resources on pesticides which pose greater risk to humans and the environment. This exemption provision is located in section 152.25(g) of Title 40 of the Code of Federal Regulations.

To qualify for an exemption as a minimum risk pesticide, each active ingredient in the pesticide product must be listed in 40 CFR 152.25(g)(1). Appendix A is a list of these ingredients. Currently, this list contains more than 30 active ingredients. In addition, 40 CFR 152.25(g)(2) provides that these pesticide products may only contain minimal risk inert ingredients listed in the most current List 4A. Appendix B is the most current list of these inert ingredients. Additionally, to be exempted and remain exempted, products must also meet a series of exemption

conditions described in 40 CFR 152.25(g)(3).

EPA does not review or issue notices of exemption for products which meet the conditions for exemption. Sale or distribution of a pesticide product meeting all the criteria in 40 CFR 152.25(g) without a federal registration is not a violation of FIFRA. However, if a product does not meet all of the exemption criteria, the product is not exempt from FIFRA and its sale or distribution if not registered would be a violation of FIFRA.

How to Determine if a Product Qualifies for Exemption as a Minimum Risk Pesticide Under 40 CFR 152.25(g).

QUESTION: How can I tell if my product qualifies for the minimum risk pesticide exemption?

ANSWER: To qualify as a minimum risk pesticide under 40 CFR 152.25(g) (and be exempt from pesticide registration), a product must meet certain conditions. These conditions fall into the following two categories.

1. Composition:

- active ingredients: may contain only those active ingredients that are listed in 40 CFR 152.25(g)(1) and shown in Appendix A.
- other (inert) ingredients: may contain only List 4A inerts, including commonly consumed foods. (See Appendix B).

2. Labeling:

- All ingredients in an exempted product must be listed on its label:
 - Active ingredients must be listed by name and percentage (by weight).
 - All other ingredients must be listed by name (see above for inerts).
- No false or misleading statements under 40.CFR 156.10.(a)(5)(i)-(viii) may appear on an exempted product's label.
- Labeled Uses:
 - The product may not bear any claims to control or mitigate microorganisms in a way that links the microorganism to a threat to human health (including but not limited to disease transmitting bacteria or viruses) or claims to control rodent or insect pests in a way that links the pest to *specific* diseases (for example, the label may not say "controls ticks that carry Lyme disease" or "controls mosquitoes that can transmit

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malaria or encephalitis," but can say "controls ticks," or, "controls mosquitoes," etc.).

It is important to note that even if a pesticide product meets the conditions for exemption from regulation under FIFRA, it is still subject to any applicable requirements of the Federal Food, Drug, and Cosmetic Act (FFDCA) if its use results in pesticide chemical residues on or in food commodities or animal feed. In addition, producers of pesticides must meet any applicable state registration or other regulatory requirements. Each state has its own statutes and regulations concerning pesticide registration and regulation, and the states are not required to permit the sale of an exempted product simply because it meets the 40 CFR 152.25(g) conditions for minimum risk exemption. An address and telephone list of the state agencies which regulate pesticides may be found at: <http://aapco.ceris.purdue.edu> and at <http://www.epa.gov/pesticides/biopesticides/otherdocs/statelist.htm>. You may also call (703) 305-7973 to obtain a paper copy.

III. COMPOSITION OF "MINIMUM RISK PESTICIDES"

1. Active Ingredients

QUESTION: What active ingredients may be used in an exempted pesticide product?

ANSWER: Only active ingredients listed in 40 CFR 152.25(g)(1) may be in exempt products. Appendix A to this PR Notice lists all of the active ingredients which are currently permissible ingredients in exempt products.

QUESTION: Can other active ingredients be added to this list? How?

ANSWER: The Agency may modify this list in the future, but any additions (or deletions) would have to be accomplished through rule making. Companies cannot obtain an exemption on an ad hoc basis as part of the application process. EPA cannot exempt an ingredient or product as part of the application process without having completed the required rule making.

2. Other Ingredients

QUESTION: What other ingredients may be used in exempted products?

ANSWER: The only other ingredients an exempt product may contain are listed in the most current List 4A inert ingredients, which the Agency last published in the *Federal Register* of September 28, 1994. List 4A inert ingredients are considered to be minimal risk inert ingredients, and are recognized as safe for use in pesticide products. The current List 4A minimal risk inerts are listed in Appendix B to this PR Notice.

QUESTION: Can common foods be used as inert ingredients in exempted products?

ANSWER: Yes. EPA's policy is that "commonly consumed foods" are considered List 4A inert ingredients of minimal concern, even if they are not already included on the list of minimal risk inert ingredients. (See 59 FR 49400, September 28, 1994) "Inert Ingredients in Pesticide Products; List of Minimal Risk Inert Ingredients."

QUESTION: Will additions to the List 4A be possible?

ANSWER: Yes. Additions to List 4A are being considered by the Agency. Any changes will be published in the *Federal Register*.

QUESTION: If a List 4A minimal risk inert has active, pesticidal properties, am I allowed to use it as the active ingredient in an exempt product?

ANSWER: No. The two lists are not interchangeable. In other words, you may not use a List 4A inert ingredient as an active ingredient, and you also may not use one of the active ingredients listed in 40 CFR part 152.25(g)(1) as an inert. Only if the ingredient is included on both lists can it be used without regard to its active or inert function. Even then, the ingredient must be designated on the label as either active or inert (See Labeling below).

IV. LABELING OF MINIMUM RISK PESTICIDES

QUESTION: What should I include on my product's label?

ANSWER: In order to qualify for the minimum risk pesticide exemption, the pesticide product must meet certain labeling conditions. These conditions, all of which must be met in order to qualify for exemption, are as follows:

1. The pesticide product containing permissible substances must bear a label identifying the name and percentage (by weight) of each active ingredient and the name of each inert ingredient;
2. The product may not bear any claims to control or mitigate microorganisms in a way that links the microorganisms to a threat to human health (including but not limited to disease transmitting bacteria or viruses) or claims to control rodent or insect pests in a way that links the pest to *specific* diseases (for example, the label may not say "controls ticks that carry Lyme disease" or "controls mosquitoes that can transmit malaria or encephalitis," but can say "controls ticks," or, "controls mosquitoes," etc.);

and

3. The product must not include any false or misleading labeling statements prohibited by 40 CFR 156.10 (a)(5)(i)-(viii). To follow is a list of unacceptable types of statements that Agency regulations provide are false or misleading, along with some examples:

- a. A false or misleading statement concerning the composition of the product;
- b. A false or misleading statement concerning the effectiveness of the product as a pesticide or device;
- c. A false or misleading statement about the value of the product for purposes other than as a pesticide or device;
- d. A false or misleading comparison with other pesticides or devices;
- e. Any statement directly or indirectly implying that the pesticide or device is recommended or endorsed by any agency of the Federal Government;

Example: "Recommended by EPA as safe and exempt." This kind of statement leads the consumer to believe that the Federal Government has made such a determination for a particular product. Because exempted products are not reviewed by EPA, this kind of statement is misleading.

Example: "It is a Violation of Federal Law to Use this Product in a Manner Inconsistent with its Labeling."

Example: "EPA Registration No." or "EPA Establishment No."

The latter two examples are false or misleading because they imply that the product is registered by EPA.

Example: An example of a statement that the Agency would likely consider acceptable would be: "This product has not been registered by the United States Environmental Protection Agency. [The name of the company] represents that this product qualifies for exemption from registration under the Federal Insecticide, Fungicide, and Rodenticide Act."

- f. The name of a pesticide which contains two or more principal active ingredients if the name suggests one or more, but not all such principal active ingredients, even though the names of the other ingredients are stated elsewhere in the labeling;
- g. A true statement used in such a way as to give a false or misleading impression to the purchaser;
- h. Label disclaimers which negate or detract from labeling statements required under the act and these regulations, including as conditions of exemption.

QUESTION: I have found mosquito and tick repellents on the market shelf that do not have EPA registration numbers. I thought that exempted pesticide products could not be labeled to control these kinds of pests?

ANSWER: Claims that the exempted pesticide controls these kinds of *pests* are allowed, but no claims may be made to make the consumer believe that they would be protected by using the product from a *disease* that these insects can carry, such as Lyme disease. **Remember: the claim may only be for the pest, as a pest, and not as a disease vector.**

Example of an appropriate claim: "repels mosquitoes and ticks."

Examples of an inappropriate claim: "repels mosquitoes that can transmit malaria," or, "Will repel ticks that cause Lyme disease."

QUESTION: I have seen products that say they are "the natural way to control pests," or "safe for kids and pets." Aren't these considered by EPA to be false and misleading claims?

ANSWER: No, not for exempted minimum risk pesticides. Products that meet the criteria for exemption from regulation may make safety claims if true. On the other hand, claims cannot be worded in such a way that implies or states endorsement by EPA or another federal agency or department.

V. FOOD TOLERANCES FOR "MINIMUM RISK PESTICIDES"

QUESTION: What are the requirements if my product is to be used on or around food, food crops, food contact surfaces, or animal feed?

ANSWER: Even if a product is exempt under FIFRA, it must have a tolerance or tolerance exemption under FFDCA, if the product is to be used on food, food crops, food contact surfaces, or animal feed commodities.

The minimum risk pesticide exemption, 40 CFR 152.25(g), only exempts qualifying pesticide products from certain requirements of FIFRA. The use of pesticides on food, food crops, food contact surfaces, and animal feed can result in residues of pesticide products on or in treated foods or foods which come into contact with treated surfaces. Tolerances are maximum legally permissible levels of pesticide residues, including active and inert ingredients, which may be found in foods. In some instances, pesticides are exempted from the requirement of a tolerance, because the pesticide is considered to be safe enough for use at any level.

Tolerances and exemptions from tolerance are established and regulated by the EPA under the Federal Food, Drug and Cosmetic Act (FFDCA), not FIFRA. The pesticide label may bear only those food uses for which there are tolerances or exemptions from tolerances for the active and inert ingredients. If the tolerance exemption is for all food commodities, then any food crops, food surfaces, or animal feed can be listed on the label.

QUESTION: How can I find out if my active and inert ingredients have tolerances or are exempt from the requirement of a tolerance?

ANSWER: Tolerances and exemptions for foods are listed in Parts 180, 185, and 186 of Title 40 of the Code of Federal Regulations for each active ingredient and inert ingredient.

Appendices A and B can be used to identify which actives and inerts are exempt from tolerances on all crops as of the date of this notice. In addition, tolerances and exemptions are published throughout the year in the Federal Register. This source is frequently more up-to-date than the latest version of 40 CFR and thus, needs to be checked to verify that no changes have occurred since the last printing of the 40 CFR.

QUESTION: How do I get a tolerance if I need one?

ANSWER: The first step to receive a tolerance is to petition the Agency by following the guidelines found in 40 CFR section 180.7 (see www.gpo.gov). Additional guidance can be found at www.epa.gov/PesticideApplication. The Agency will then announce the receipt of the petition in the Federal register. Tolerance fees are required, but may be waived on a case-by-case basis.

VI. STATE REGULATION OF "MINIMUM RISK PESTICIDE" PRODUCTS

QUESTION: What must I do to meet any applicable state registration requirements?

ANSWER: Even if a pesticide product is exempt from FIFRA requirements, the product may not be exempt from state registration or other regulatory requirements. Each state has its own statutes and regulations concerning pesticide registration and regulation. A pesticide product exempted from federal regulation is not automatically exempt in a state. It is important that you contact the state agencies responsible for pesticide regulation in those states in which you would like to sell your product, so you can find out what you need to do in order to satisfy their

requirements for pesticide registration if required. An address and telephone list of the state agencies which regulate pesticides is available online

<http://www.epa.gov/pesticides/biopesticides/otherdocs/statelist.htm>.

You may also call (703) 305-7973 to obtain a paper copy.

QUESTION: What happens if a state won't accept my product as an exempted pesticide?

ANSWER: You may:

1. Comply with the State's requirements in order to sell and distribute the product; or
2. Not sell or distribute the product in that state; or
3. You may register the product with the EPA if EPA determines that your product meets all the health and safety standards and all other applicable requirements. You must also meet any applicable State requirements for your product.

If a pesticide product does not meet the conditions for minimum risk pesticide exemption, or if states will not accept the product without an EPA registration, a registration kit may be obtained by calling 703-305-6549. The kit is also available on our website, at www.epa.gov/pesticides/registrationkit.

Please note that the sale or distribution of a pesticide without an EPA registration that does not meet the conditions for a minimum risk pesticide and does not fall within any other exemption from FIFRA is a violation of FIFRA. (See, e.g., FIFRA section 12(a)(1).)

VII. FOR FURTHER INFORMATION

If you have any further questions, please contact Brian Steinwand at (703) 305-7973 (e-mail: steinwand.brian@epa.gov).

Marcia E. Mulkey, Director
Office of Pesticide Programs

Active Ingredients Which May Be in Minimum Risk Pesticide Products Exempt under section 25(b) of FIFRA

1. Castor Oil (U.S.P. or equivalent)
2. Cedar Oil
3. Cinnamon* and Cinnamon Oil *
4. Citric Acid*
5. Citronella and Citronella Oil
6. Cloves* and Clove Oil*
7. Corn Gluten Meal*
8. Corn Oil*
9. Cottonseed Oil*
10. Dried Blood
11. Eugenol
12. Garlic* and Garlic Oil*
13. Geraniol
14. Geranium Oil
15. Lauryl Sulfate
16. Lemon grass Oil*
17. Linseed Oil
18. Malic Acid*
19. Mint* and Mint Oil*
20. Peppermint* and Peppermint Oil*
21. 2-Phenethyl Propionate (2-phenylethyl propionate)
22. Potassium Sorbate
23. Putrescent Whole Egg Solids (See 180.1071)
24. Rosemary * and Rosemary Oil*
25. Sesame* (includes ground Sesame plant stalks) (See 180.1087) and Sesame Oil*
26. Sodium Chloride (common salt)*
27. Sodium Lauryl Sulfate
28. Soybean Oil
29. Thyme* and Thyme Oil*
30. White Pepper*
31. Zinc Metal Strips (consisting solely of zinc metal and impurities)

* These active ingredients are exempt for use on all food commodities from the requirement of a tolerance on all raw agricultural commodities at 40 CFR 180.1164(d).

LIST 4A Minimal Risk Inerts

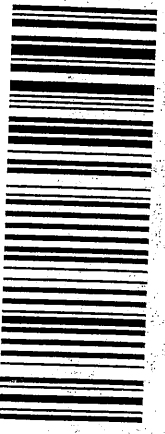
Parentheses indicate exemption from tolerance as inerts if all the conditions set forth in the text and tables shown for the particular substance at 40 CFR 180.1001(c), (d) and/or (e) are met.

| | | | |
|------------------------------|------------------------------|----------------------------|---------------------|
| Acetic acid (c, d, e) | Cookies | Kaolinite-type clay (c, e) | Potatoes |
| Agar | Cork | Lactose (c) | Pumice |
| Alfalfa | Corn (d) | Lanolin (d) | Raisins |
| Alfalfa meal | Corn cobs (c) | Lard (c) | Red cedar chips |
| Almond hulls | Corn flour | Latex | Red dog flour |
| Almond shells (c) | Corn meal (c) | Lecithin (c) | Rice |
| Alpha cellulose (c) | Corn oil (c) | Lime | Rice hulls |
| Apple pomace (c) | Cornstarch(c) | Limestone | Rubber |
| Attapulgate-type clay (c, e) | Corn syrup (c, e) | Linseed oil | Rye Flour |
| Beef fat | Cotton | Malt flavor | Safflower oil |
| Beeswax (c) | Cottonseed meal | Meat meal | Sawdust |
| Beet powder | Cottonseed oil (c) | Meal scraps | Seaweed, edible |
| Bentonite (c) | Cracked oats | Medicated feed | Shale |
| Bone Meal | Cracked wheat | Mica (c) | Soapstone (c, e) |
| Bran | Dextrin (c, e) | Milk | Sodium |
| Bread crumbs | Dextrose (c, e) | Millet seed | bicarbonate (c) |
| Calcareous shale (c) | Dolomite (c) | Mineral oil, U.S.P. (c, e) | Sodium chloride (c) |
| Calcite (c) | Douglas-fir bark, ground (d) | Molasses (c) | Sorbitol (c, e) |
| Calcium | Eggs | Montmorillonite-type | Soybean hulls |
| carbonate (c,e) | Egg Shells | clay (c, e) | Soybean meal |
| Canary seed | Edible fish meal (c) | Nitrogen | Soybean oil (c, e) |
| Cane syrup | Edible fish oil (c) | Nutria meat | Soy flour (c) |
| Carbon dioxide | Flour (wheat, d) | Nylon | Soy protein (c, e) |
| Cardboard | Fuller's earth | Oatmeal (c) | Sucrose (c, e) |
| Carrageenan (c, d, e) | Gelatin | Oats (c) | Sugarbeet meal |
| Carrots | Glue, as depolymerized | Olive oil | Sunflower seeds |
| Casein (c) | animal collagen | Onions | Tallow |
| Cheese | Glycerin (glycerol; c, d, e) | Orange pulp (as pomace c) | Vanillin (d) |
| Chlorophyll | Granite (c) | Oyster shells | Vermiculite (c) |
| Cinnamon (d) | Grape pomace (c) | Paper (fiber; d) | Vitamin C |
| Citric acid (c, e) | Graphite (c, d, e) | Paprika | Vitamin E |
| Citrus meal (c) | Ground oats | Paraffin wax | Walnut flour |
| Citrus pectin | Guar gum (c) | Peanut butter | Walnut shells (c) |
| Citrus pulp | Gum arabic (c) | Peanut oil | Water |
| Clam shells | Gum tragacanth | Peanuts | Wheat (d) |
| Cloves (d) | Gypsum (c) | Peanut shells (c) | Wheat germ oil |
| Cocoa | Hearts of corn flour | Peat moss | Whey |
| Cocoa shells (c) | Hydrogenated vegetable oils | Pecan shell flour | Wintergreen oil (c) |
| Cocoa shell flour | Honey | Pectin | Wool |
| Cod liver oil (c) | Invert sugar (c) | Polyethylene film (c) | Xanthan gum (c, e) |
| Coffee grounds (c) | Invert syrup (c) | Polyethylene pellets | Yeast |

180.1001 (c) = exempt for both growing crops & crops after harvest

(d) = exempt for growing crops only

(e) = exempt for animal applications only



7002 2410 0002 6620 5892

MILKY SPORE
ST. GABRIEL LABORATORIES
14044 LITCHFIELD DRIVE
ORANGE, VA 22960
1-800-801-0061

RETURN RECEIPT
REQUESTED

RECEIVED APR 23 2004

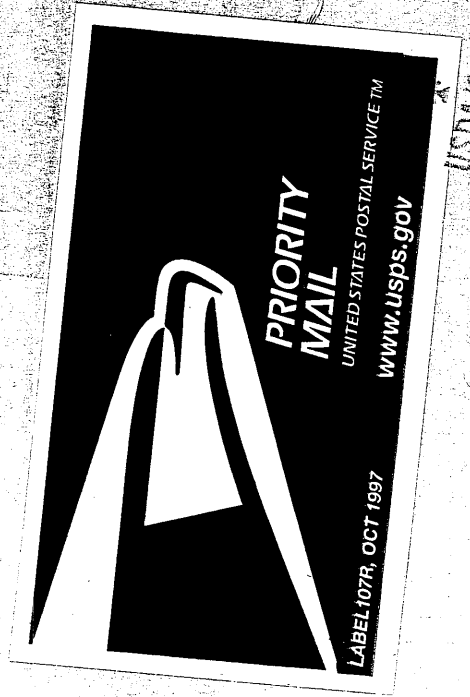
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ANNEX

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Room
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APR 23 2004

