Household Product Public Education

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Call Number:

Ingredients for each product:
-Liquid detergent
-stain removers
-air fresheners

- sodium silicate[1]
  - irritation to skin and corneal damage noted, if swallowed can cause v/d
  - chemical can asphyxiate mussels in ecosystem
  - renal lesions noted in dogs after being fed food containing sodium silicate [2]
  - considered toxic in freshwater cladoceran population[3]
- Sillica
  - Carcinogenesis found in industrial studies (specifically lung cancer)[4]
  - Environmental impact is considered minor when taking into account the amount of naturally occurring silica in both water and land[5]
- perfumes
  - are they an issue, toxicology information is hard to find?
- isobutane[6]
  - chemical found in air in high traffic areas, service stations, insect sprays, window and glass cleaners, personal spray deodearants, rug and upholstery cleaners
  - in very high doses it causes respiratory /cardiac issues in animals
  - human studies suggest it to be minimally harmful or even perhaps harmless
  - biodegradable and has short half life. Does not accumulate in soil or in mammals.
- propane[7]
  - can depress cns system at very high levels
  - after exposure to person it can accumulate in breast milk
  - volatile
  - produces cns depression in various kinds of animals- specifically respiratory depression and distress
  - can also cause skin burns

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[1] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1344-09-8

[2] **Final report on the safety assessment of Potassium Silicate, Sodium Metasilicate, and Sodium Silcate**
Anonymous

[3] **Toxicity of laundry detergent components to a freshwater cladoceran and their contribution to detergent toxicity.**
Warne MS; Schifko AD
Ecotoxicol Environ Saf. 1999, Oct; 44(2):196-206. [Ecotoxicology and environmental safety] [PubMed]

[4] **Silica**
Anonymous
IARC Monographs on the evaluation of the carcinogenic risk of chemicals to humans

[5] **Synthetic Amorphous Silica**
Anonymous
ECETOC Joint Assessment of Commodity Chemicals Vol:51 (2006) 221 p

[6] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+75-28-5

[7] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+74-98-6

  - can stay as atmosphere as part of smog for high amount of time since sunlight does not break it down
  - not a significant problem for aquatic ecosystem unless in high amounts since it takes awhile to breakdown
- Ammonium Hydroxide[8]
  - Hazardous substance when 1000lb or more is released into nature
  - gas and liquid are both very corrosive. Eye injuries can be permanent and severely disabling. Dermal contact is also toxic
  - several generations of trout exposed to ammonium hydroxide grew lesions and were more susceptible to infections
  - considered 'weak mutagen'- alteration in some 'hormone sensitive'[9] organs have been noticed in animals exposed to ammonium hydroxide
- hydrocarbon propellant
  - unknown-talk to toxicologist?
- ethanol
  - alcohol- is this an issue as a spray(toxicologist?)
  - environmental impact seems negligible(?)
- sorbitan oleate[10]
  - considered non-toxic based on the high amount needed for a lethal dose
  - rats on a diet including sorbitan oleate had some organ enlargement(specif. liver, kidney) and some tubular defects. This not completely conclusive as research suggested malformations were from the poor diet
  - mild skin irritant[11]
- Butane[12]
  - Dec. cns when airborne, can cause death with high enough concentrations
  - In low airborne concentrations it can cause drowsiness
  - Has been noted to cause myoclonus and severe frost bite when used in cleaners
  - Possible developmental effects in foetus, has been found in breast milk
  - environmentally it is an airborne pollutant and has a long half life when introduced to land or water. It has a moderate chance to stay within aquatic mammals
- nonnylphenol polyethoxylate(another name: C9-11 Pareth-3)

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[8] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1336-21-6

[9] **Ammonium hydroxide**
BIBRA working group
(1995) 6 p [RISKLINE]

[10] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1338-43-8

[11] **Final report on the safety assessment of sorbitan stearate, sorbitan laurate, sorbitan sesquioleate, sorbitan oleate, sorbitan tristearate, sorbitan palmitate, and sorbitan trioleate**
Anonymous
J Am Coll Toxicol Vol:4, 3 (1985) pp 65-121 [RISKLINE

[12] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+106-97-8

  - Form of aylkl ethy oxalates
  - health concerns such as kidney, liver alteration, hormone disruption(both estrogen and testosterone) [13] in rats and environmental[14] -concerns specifically with chemical survival in water, does cause sexually abnormal development in fish
  - banned in Europe, under study in Canada and allowed in the usa
- diethylene glycol ethyl ether[15]
  - large scale ingestion of substance can cause respiratory and cns irritation and damage
  - embryotoxic when tasted
  - when applied as a cosmetic it can be dangerous when used on broken skin or when used on those with renal issues
  - when fed to animals there is an enlargement of kidneys, dec. in hemoglobin, degenration of renal tubules
  - when given to pregnant mice, mother loses weight or dies but foetus shows no signs of being altered.
  - Irritation, health effects vary between animals
  - In great enough levels is lethally toxic to fish
  - 'highly mobile' in wet soil. Does bio-degrade well in dry soil
  - does not break apart but research suggests that it accumulates in small amounts in aquatic organisms
- (hydrotreated?)petroleum, hydrotreated light
- citrus oils(toxicologist?)
- acetone[16]
  - naturally occurs as a ketone body
  - reproductive and developmental effects noticed in rats
  - could enhance the hepatotoxic effects of other substances
  - vapor effects range from a minor eye irritation to vomiting and fainting]
  - acute xposure can also cause menstrual irregularities
  - unknown carcinogenicity due to lack of data
  - can cause dermatitis
  - inhalation or ingestion can cause organ damage incl. Lung,kidney, liver injury and cns depression
  - lethal to ecosystem animals if in large enough quantities
  - injuries to animals vary, generally if dose is large enough irritation to eyes, or organ enlargment is noticed
  - in rats and mice there was minimal changes in reproductive organs, development of young
  - acetone is naturally emitted by volcanic eruptions, cigarette smoke, wood burning fire places.

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[13] http://envirostats.files.wordpress.com/2007/08/endocrine-disruptors.pdf
[14] http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl2-lsp2/nonylphenol/nonylphenol_2_e.html
[15] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+111-90-0
[16] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+67-64-1

  - Acetone does biodegrade in aerobic, anaroebic conditions. Chemical does have a long half life in water.
  - Bioconcentration is reported to be low in aquatice organims
  - High mobility noticed in soil, has been noticed in ground water, wells in areas near disposal of
  - Has been recorded in rainfall over major cities
  - found in human breast milk
- Nitrogen[17]
  - Inhalation of vapor can cause severe burns in oropharyngeal region
  - Inhalation of gas causes decreased cns response
  - Dangerous to contact when in liquid form
  - Injection of nitrogen gas into the eye ball of rabbits caused no harmful effects
  - Increase of nitrogen in room air can eventually cause hypoxia in mice
  - Found in many mineral deposits, makes up percentage of atmosphere
- Terpenes and Terpenoids, type citrus oil
  - Unknown, some sort of citric oil?-toxicologist?
- tryethylene glycol[18]
  - reportedly not harmful to skin, eyes, resp system,/ not a health hazard to humans whatsoever
  - basically harmless in animals except in very large doses that can delay developmental growth and cause kidney enlargment
  - biodegradation is the only form of destruction of this chemical
  - it is highly mobile in soil and has a long half-life in water
  - its effects on aquatic organisms though are considered minimal
- isopentane[19]
  - irritant to resp tract, gi tract and skin
  - retained in lungs, found in personal air
  - cns depressant when inhaled
  - cardiac sensitizer-in experiment it killed all through arrhythmias
  - at high enough levels is eco-toxic, animal-toxic
  - naturally occurring compound emitted by several types of trees/motor vehicle exhaust
  - has relatively long half life in air and water(especially long in lakes where half life is 3 days)
  - in water it can end up in soil/sediment
  - bio concentration in aquatic organisms classified as 'moderate'
- Pentane[20]
  - Cns depressant, lethal in high enough doses

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[17] **NITROGEN**
7727-37-9 HSDB
[18] **TRIETHYLENE GLYCOL**
112-27-6 HSDB
[19] **ISOPENTANE**
78-78-4 HSDB
[20] **PENTANE**
109-66-0 HSDB

  - On skin causes irritation, burning, itching leading to blisters
  - Pneumotitis, pulmonary edema have been known to occur with aspiration
  - Found in breast milk in several us cities
  - Has been noted to cause nerve blockage in animals, developmental abnormalities. Most rats died from respiratory collapse(can occur at lower concentrations)
  - No changes in rat foetus when pentane administered, not found to be mutagenic
  - Neutropenia and hepatomegaly found after sub cutaneous injections in rats
  - General solvent and component of natural gas and crude oil
  - High mobility in soil
  - Becomes vapor in atmosphere
  - Half life is long in water(3 days in lake)
  - Bioconcentration for aquatic organisms would be 'moderate'
- diethylene glycol monobutayl ether[21]
  - reddening when dermal contact was made, not irritating
  - various symptoms observed: cns depression, renal failure, muscular skeletal pain, organ lesions,
  - not corrosive to resp tract
  - lethal dose in humans: 1 ml/kg
  - effects in animals are hemolytic: ie. Splenomegaly, anemia, hemoglobinuria, kidney damage
  - no effects on sexual organs though there was a noted decrease in maternal body weight gain in rats
  - very high soil mobility, becomes gas in atmosphere with a halflife of 7.2 hours
  - not likely to absorb into soil, surfaces in water
- Stearic acid[22]
  - Ingestion can cause intestinal obstruction, aspiration can cause chemical pneumonia
  - Implantation of the acid causes foreign body reaction
  - Vapors can irritate upper respiratory tract
  - Found to be not very irritating to skin
  - Considered to basically be non-toxic though can be lethal of ingested in large enough quantities
  - Lethal dose causes pulmonary emboli in mice, thrombogenic in other animals (diminishes time for clotting)…predilection for pulmonary infections also noted
  - Erratic weight gain also noted in rats when stearic acid added to diet
  - Vapor and particulate phase in atmosphere has a halflife of 17 hours

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[21] **DIETHYLENE GLYCOL**
111-46-6 HSDB
[22] **STEARIC ACID**
57-11-4 HSDB

  - Completely immobile in soil though long half life in it(several days)
  - In aquatic environment the chemical has a high probability to migrate into soil or sedimentation
  - Very high bioconcentration in aquatic organisms
  - Found in cosmetics, suppositories, soaps, lubricants, ointments, food packaging
- paraffin waxes, wax in general?
- Perfumed/fragrance scents?
- Natural gum?
- White Mineral oil
- Isoparaffinic hydrocarbon(s)[23]
  - Considered to be practically non toxic if inhaled, touched or swallowed, aspiration though can be quite damaging to lung tissues and cause pneumonia
  - environmental issues?
  - Used also as weapons cleaner
- Alkyl (C12-C18) dimethyl benzyl ammonium chloride
  - Ethane? Toxicologist info?
- Alkyl(C12-C14)dimethyl ethyl benzyl ammonium chlorides
  - Ethane? Toxicologist?
- sodium aluminosillicate
  - irritant to skin, eyes, mucous membranes
  - even at high levels toxicity not found in mammals, aquatic organisms
  - study on use as detergent showed no significant environmental impact
  - limited information found in database on this chemical
- octophenoxypoly (ethoxyethanol)
  - ?? limited info, toxicologist?
- dipropylene glycol monomethyl ether[24]
  - no irritation found in skin patch tests
  - irritating to respiratory passages though no organic injuries noted
  - 0.5-0.6 ML/KG. Is the dose necessary via iv to kill a dog, death by respiratory arrest via cns depression, gastric corrosion noted
  - low toxicity in general with animals
  - when applied to eyes in rabbits it causes mild transitory reaction/irritation
  - constituent of a variety of industrial and consumer products including hydraulic brake fluid, solvents, paints, dyes, household cleaners, cosmetics, and pesticide formulations.
  - Highly mobile and will leach into ground water, otherwise environmental impact is minimal

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[23] **Toxicology update isoparaffinic hydrocarbons: a summary of physical properties, toxicity studies and human exposure data.**
Mullin LS; Ader AW; Daughtrey WC; Frost DZ; Greenwood MR
J Appl Toxicol. 1990, Apr; 10(2):135-42. [Journal of applied toxicology : JAT] [PubMed]

[24] **DIPROPYLENE GLYCOL MONOMETHYL ETHER**
Synonym: **dipropylene glycol methyl ether**
34590-94-8 HSDB

- Sodium xylenesulfonate[25]
    - Low toxicity level
    - Information limited

-bathroom cleaner

- tetrasodium edta[262728]
    - when added to eye causes change in acid base balance and permanent damage
    - intra venous application can cause severe hypocalcemia leading to tetany and death
    - found to be genotoxic and fetotoxic in mice
    - possible carcinogen
    - limited info on environmental effects(toxicologist)
- dipropylene glycol monomethyl ether[29]
    - no irritation found in skin patch tests
    - irritating to respiratory passages though no organic injuries noted
    - 0.5-0.6 ML/KG. Is the dose necessary via iv to kill a dog, death by respiratory arrest via cns depression, gastric corrosion noted
    - low toxicity in general with animals
    - when applied to eyes in rabbits it causes mild transitory reaction/irritation
    - constituent of a variety of industrial and consumer products including hydraulic brake fluid, solvents, paints, dyes, household cleaners, cosmetics, and pesticide formulations.
    - Highly mobile and will leach into ground water, otherwise environmental impact is minimal
- hydrogen peroxide[30]
    - unknown carcinogenicity in humans though proven carcinogenic in animals
    - if ingested, possibly severe gi damage can be done
      can be very painful if gotten in eyes
- 2-Butoxyethanol[31]
    - widely used solvent found in paints and varnishes
    - readily absorbed via inhalation, dermal contact and oral exposure

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[25] **SODIUM XYLENESULFONATE**
CASRN: 1300-72-7 HSDB

[26] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+64-02-8

[27] **Ethylenediaminetetraacetic acid, Tetrasodium ethylenediamintetraacetate (H4EDTA/Na4EDTA) (May 1995)**
Anonymous
Beratergremium fuer umweltrelevante Altstoffe (BUA) Vol:168 (1997) 233 p

[28] **Tetrasodium Ethylenediaminetetraacetate (Na4EDTA)**
Anonymous
European Union risk assessment report Vol:51 (2004) 160 p

[29] **DIPROPYLENE GLYCOL MONOMETHYL ETHER**
Synonym: **dipropylene glycol methyl ether**
34590-94-8 HSDB

[30] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7722-84-1

[31] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+111-76-2

  - possible carcinogen(further studies needed to actually create proof)
  - reportedly irritating to eyes and skin
  - reportedly hemolytic effects in animals though humans seem resistant to hemolysis
  - causes reproduction and developmental alterations in animals
  - when in atmosphere becomes vapor, half life is 16hours
  - high mobility in soil
  - biodegrades rapidly in water
  - low risk of being absorbed by aquatic organisms
- D-Glucopyranose, oligomeric, decyl octyl glycosides
  - Reports of skin and eye irritation
  - Toxicologist?
- hydroxyacetic acid[32]
  - byproduct of production, found in sugar cane, textile dyeing, well cleaning, dairy farm cleaning, soldering chemicals together, breaking petroleum emulsions, used to regulate ph medically,
  - mild irritant to skin, mucous membranes, ingestion is moderately toxic. High dose solution causes severe burns
  - is a cause of metabolic acidosis
  - in animals causes kidney and liver toxicity/injuries and metabolic acidosis
- D-Glucopyranose, oligomeric, C9-11-alkyl glycosides
  - Unknown(toxicologist)
- Alkyl(C12-18)dimethylbenzyldimethylethylbenzyl ammonium chlorides
  - Unknown (toxicologist
- citric acid[33][34]
  - used in food, drink preparations and also pharmaceutical creations and cleaners
  - mildly irritating to gi tract after consuming, created nausea, diarrhea and indigestion
  - inhalation causes coughing
  - large enough intravenous doses cause hypocalcaemia and eventually cardiac arrest
  - very irritating and damaging to eyes due to acidic content of substance
  - can cause erosion of dental enamel
  - high enough doses are cytotoxic, in animals when applied to the tongue in high doses it is ulcerative and causes lesions
  - administration to rats can cause ataxia followed by other motor issues and then leads to respiratory and cardiac failure
  - not carcinogenic or reprotoxic or developmentally toxic
  - biggest is irritation to upper respiratory tract, eyes, skin
  - highly mobile in soil
  - low acute toxicity to marine organisms

[32] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+79-14-1
[33] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+77-92-9
[34] http://www.chem.unep.ch/irptc/sids/OECDSIDS/77929.pdf

- is not considered to be hazard to environment, quick biodegradableness

- Sodium hydroxide[35]
  - Studies widely show chemical is irritating and corrosive to surfaces it touches
  - Ingestion can be fatal\concern for children
  - Cannot reach female/male reproductive organs or foetus
    Damage to environment[water] depends or buffer level of ecosystem, ph level can be altered and toxicity in organisms is possible
- Sodium Hypochlorite[36]
  - Not cancer causing in animals, not studied in humans for carcinogencity
  - Ingestion causes pain and inflammation in areas of contact along with erosion of mucous membranes. Aspiration can cause respiratory failure
  - Addition to circulatory system will cause coma or cardiac arrest and/or death
  - Skin contact causes irritation in the form of vesicular eruptions, eczematoid dermatitis, onycholysis, hair may reversibly fall off
    Very hazardous to environment, may chlorinate water[37]
- Aluminum Distearate[38]
  - Irritation reported in lung and eyes
  - Used as a stabilizer in preserving food, used in cosmetics, water repellant soap, organic solvents
  - Environmental unknown
- calcium carbonate
  - inhalation/nasal exposure leads to minimal irritational symptoms
  - if absorption is high enough systemic and renal effects could occur.
  - Used in antacids and use in antacids has been associated with hypercalcemia and medical issues relating to hypercalcemia, including emergency pregnancies
  - Association with cancer in industrial setting
  - Adding dust to rabbits eyes or injecting rabbit with amount of alcium carbonate causes very little effect
  - carcinogenic in animals
  - causes low ph in aquatic species
  - toxic at high enough levels

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[35] **Sodium hydroxide**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (2004) 112
[36] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7681-52-9
[37] **Natriumhypochlorit**
Anonymous
Toxikologische Bewertung. Heidelberg, Berufsgenossenschaft der chemischen Industrie Vol:175 (1991) 49 p [German] [RISKLINE]
[38] **ALUMINUM DISTEARATE**
300-92-5 HSDB

  - pesticide, food additive, industrial finishes, coatings, Manufacturer of paint, rubber, plastics, paper, dentifrices, ceramics, putty, polishes, insecticides, inks, shoe dressings; as filler in production of adhesives, matches, pencils; crayons, linoleum, insulating compds, welding rods. cosmetics, pharmaceuticals, antibiotics; removing acidity of wines. in analytical chemistry for detecting and determining halogens in organic combinations; with ammonium chloride for decomposing silicates; preparing calcium chloride soln for standardizing soap soln; for water analyses.
- aylkyl phenol ethyoxalates
  - Form of aylkl ethy oxalates
  - health concerns such as kidney, liver alteration, hormone disruption(both estrogen and testosterone) [39] in rats and environmental[40] -concerns specifically with chemical survival in water, does cause sexually abnormal development in fish
  - banned in Europe, under study in Canada and allowed in the usa
- tetradecylbenzyldimethylammonium chloride
  - skin and eye irritant
  - used as surfactant, detergent and a germicide,
  - not mobile in soil
  - particle phase in atmosphere
  - does not concentrate in aquatic organisms
  - does not concentrate in soil or sediment
- **Dodecyl dimethyl ethylbenzyl ammonium chloride**
  - No information found?, hazardous?
- phosphoric acid
  - after ingestion or inhalation corrosion of membranes was reported and necrosis in effected areas. Also can cause gastric hemorrhage, death is usually caused by circulatory shock and circulatory collapse
  - irritating as spray or mist
  - topically seriously damaging to eyes
  - 15 to 20% phosphoric acid destroys plants
  - toxic to fish depending on quality of acid
  - substance has mobility in soil and will infiltrate downwards
  - serious impact on ground water
- sodium lauryl sulfate[41]
  - can cause allergic dermatological reactions
  - can cause drying effect to skin, irritational to eye
  - poison by intravenous, intraperitoneal, moderately toxic by ingestion
  - when fatal poisoning was caused in animals, though symptoms seen were only diarrhea and intestinal bloating
  - not irritating in ingestion if in low enough doses
  - in ambient atmosphere the chemical exists in a particulate phase

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[39] http://envirostats.files.wordpress.com/2007/08/endocrine-disruptors.pdf
[40] http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl2-lsp2/nonylphenol/nonylphenol_2_e.html
[41] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+151-21-3

    - no mobility
    - potential for bioconcentration in organisms is moderate
    - Used in shampoos, hairdyes, toothpastes, hand dishwashing detergents; used in many cleaning compounds because of cleaning ability, mildness and foaming capability., Food additive (emulsifier and thickener)
- sodium carbonate[42]
    - irritation occurs in large quantities
    - damage to mucous membranes can occur with a concentrated amount
    - irritating to eyes not considered hazardous to environment though chemical can alter of the ph of an aquatic eco-system[43]
- sulfamic acid[44]
    - corrosion and necrosis with ingestion or dermal contact
    - cause of death is usually shock
    - strong acid, moderately toxic
    - dust form is an irritant
    - animal testing shows no serious injury
    - limited information on environmental impact
    - used primarily in cleaning products, food packaging

-disinfectant
-drain cleaner
-glass cleaner
-oven cleaners
-scouring cleansers
-toilet bowl cleaners
-bleach

- benzenesulfonic acid [45](c10-c16 alkyl derivatives)
    - limited impact in humans and environment though could impact daphnids/water fleas (cladoceran)(issue for county?)
- Sodium perborate tetrahydrate[46]
    - Not toxic to development when studied on rats
    - In large quantities can be acutely toxic to aquatic organisms[47]
- Subtilisin[48]

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[42] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+497-19-8

[43] anonymous, (2003) sodium carbonate, Screening Information Data Set for High Production Volume Chemicals. Found in toxnet.nlm.nih.gov

[44] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+5329-14-6

[45] Anonymous, benzene, c10-c16 alkyl derivatives, screening information data set for high production volume chemicals

[46] **Rat embryo-fetal development study on sodium perborate tetrahydrate.**
Bussi R; Chierico G; Drouot N; Garny V; Hubbart S; Malinverno G; Mayr W
Teratology 1996 May;53(5):26A [DART]

[47] **Toxicity of laundry detergent components to a freshwater cladoceran and their contribution to detergent toxicity.**
Warne MS; Schifko AD
Ecotoxicol Environ Saf. 1999, Oct; 44(2):196-206. [Ecotoxicology and environmental safety] [PubMed]

  - Biodegrable, high water solubility thereby having minimal environmental impact
  - Can cause mild dermatological rash, besides this impact is minimal to human health
- 2-aminoethanol
  - minor skin irritant, higher doses are needed to cause irritation
  - non mutagenic, if mutagenic effects are seen they are moinor
- Triethanolamine[49]
  - can cause dermatological problems: rashes, eczema, vesicular lesions,
  - ingestion can cause alkali burns in oropharynx/esophagus
  - not very harmful-minimum fatal dose would be about one pint for 70kg person
  - minimal environmental impact though a large scale induction of triethanolamine into the water system can alter ph[50]
- hydrogen peroxide[51]
  - unknown carcinogenicity in humans though proven carcinogenic in animals
  - if ingested, possibly severe gi damage can be done
  - can be very painful if gotten in eyes
- sodium carbonate[52]
  - irritation occurs in large quantities
  - damage to mucous membranes can occur with a concentrated amount
  - irritating to eyes
  - not considered hazardous to environment though chemical can alter of the ph of an aquatic eco-system[53]
- isopropylamine dodecylbenzene
  - flammable
  - irritating to eyes and skin
  - if swallowed lung damage could occur
  - harmful to aquatic systems, may cause long term effects
  - check with toxicologist on this chemical due to limited info[54]
- Sodium Hypochlorite[55]
  - Not cancer causing in animals, not studied in humans for carcinogencity

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[48] **Savinase'- Proteolytic enzymes in detergents**
Anonymous
NICNAS: Priority existing chemical assessment report Vol:2 (1993) pp 79 [RISKLINE]
[49] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+102-71-6
[50] **Triethanolamine**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (1997) 2 p [RISKLINE]
[51] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7722-84-1
[52] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+497-19-8
[53] anonymous, (2003) sodium carbonate, Screening Information Data Set for High Production Volume Chemicals. Found in toxnet.nlm.nih.gov
[54] http://www.wurth.com.au/msds/1893_565_1.HTM
[55] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7681-52-9

    - Ingestion causes pain and inflammation in areas of contact along with erosion of mucous membranes. Aspiration can cause respiratory failure
    - Addition to circulatory system will cause coma or cardiac arrest and/or death
    - Skin contact causes irritation in the form of vesicular eruptions, eczematoid dermatitis, onycholysis, hair may reversibly fall off
    - Very hazardous to environement, may chlorinate water[56]
- Fungal lipase(?-talk to toxicologist)
- Alcohols, C12-14-secondary, ethoxylated(talk to toxicologist)
- Sodium hydroxide[57]
    - Studies widely show chemical is irritating and corrosive to surfaces it touches
    - Ingestion can be fatal\concern for children
    - Cannot reach female/male reproductive organs or foetus
    - Damage to environment[water] depends or buffer level of ecosystem, ph level can be altered and toxicity in organisms is possible
- C12-15 Pareth-11
    - Form of aylkl ethy oxalates
    - health concerns such as kidney, liver alteration, hormone disruption(both estrogen and testosterone) [58] in rats and environmental[59] -concerns specifically with chemical survival in water, does cause sexually abnormal development in fish
    - banned in Europe, under study in Canada and allowed in the usa

-fabric sofetener
-stain remover
-dishwashing detergeants

- sodium carbonate[60]
    - irritation occurs in large quantities
    - damage to mucous membranes can occur with a concentrated amount
    - irritating to eyes not considered hazardous to environment though chemical can alter of the ph of an aquatic eco-system[61]
- Subtilisin[62]

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[56] **Natriumhypochlorit**
Anonymous
Toxikologische Bewertung. Heidelberg, Berufsgenossenschaft der chemischen Industrie Vol:175 (1991) 49 p [German] [RISKLINE]
[57] **Sodium hydroxide**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (2004) 112
[58] http://envirostats.files.wordpress.com/2007/08/endocrine-disruptors.pdf
[59] http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl2-lsp2/nonylphenol/nonylphenol_2_e.html
[60] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+497-19-8
[61] anonymous, (2003) sodium carbonate, Screening Information Data Set for High Production Volume Chemicals. Found in toxnet.nlm.nih.gov

  - Biodegrable, high water solubility thereby having minimal environmental impact
  - Can cause mild dermatological rash, besides this impact is minimal to human health
- Sodium perborate tetrahydrate[63]
  - Not toxic to development when studied on rats
  - In large quantities can be acutely toxic to aquatic organisms[64]
- sodium silicate[65]
  - irritation to skin and corneal damage noted, if swallowed can cause v/d
  - chemical can asphyxiate mussels in ecosystem
  - renal lesions noted in dogs after being fed food containing sodium silicate [66]considered toxic in freshwater cladoceran population[67]
- amylase
  - natural enzyme?
  - Harmful?
- disodium salt
  - unknown, further research, toxicologist?
- sodium dychloroisocyanurate[68]
  - considered moderately toxic
  - irritant to skin, eyes, resp tract
  - corrosive on stomach lining, gi hemmorhage?
  - Lethal doses in rats produce organ congestion, gi tract irritation, liver dysfunction(found also in rabbits)
  - Moderately severe eye irritant
  - Active ingredient in dry bleaches, dishwashing compounds, scouring powders, detergent-sanitizers, swimming pool disinfectants, water and sewage treatment, replacement for calcium hypochlorite
  - Environmental information unknown.
- sodium phosphate
  - unknown perhaps limited toxicity (toxicologist

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[62] **Savinase'- Proteolytic enzymes in detergents**
Anonymous
NICNAS: Priority existing chemical assessment report Vol:2 (1993) pp 79 [RISKLINE]
[63] **Rat embryo-fetal development study on sodium perborate tetrahydrate.**
Bussi R; Chierico G; Drouot N; Garny V; Hubbart S; Malinverno G; Mayr W
Teratology 1996 May;53(5):26A [DART]
[64] **Toxicity of laundry detergent components to a freshwater cladoceran and their contribution to detergent toxicity.**
Warne MS; Schifko AD
Ecotoxicol Environ Saf. 1999, Oct; 44(2):196-206. [Ecotoxicology and environmental safety] [PubMed]
[65] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1344-09-8
[66] **Final report on the safety assessment of Potassium Silicate, Sodium Metasilicate, and Sodium Silcate**
Anonymous
[67] **Toxicity of laundry detergent components to a freshwater cladoceran and their contribution to detergent toxicity.**
Warne MS; Schifko AD
Ecotoxicol Environ Saf. 1999, Oct; 44(2):196-206. [Ecotoxicology and environmental safety] [PubMed]
[68] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+2893-78-9

  - used as tablets for colon cleanser for colonoscopy
- sodium sulfate
  - toxic in large enough quantities to marine eco system, can be buffered with calcium[69]
  - behavioral effects on Ceriodaphnia dubia[70]
  - health effects unknown, perhaps minimal
- boric acid[71]
  - exposure causes respiratory irritation, dryness, productive cough and eye irritation, reported to cause developmental effects in males were seen-i.e decreased sperm mobility, decreased sperm count
  - ingestion by new born infants caused serious cns damage resulting in hemorrhaging and edema to the brain and spinal cord can lead to seizures, coma, death
  - chronic exposure in adults can cause balding, and hyperthermia or hypothermia
  - a single acute ingestion has been known to cause no symptoms in most people(79-88%). Those with symptoms had nausea/vomiting
  - an acute ingested overdose caused lethargy and confusion
  - erythoderma (skin throughout body becomes red and scaling)
  - other symptoms include greenish-blue vomit and diarrhea, renal problems
  - crosses placenta, overdose in pregnant mother has been known to cause death in foetus
  - inhalation in animals has been known to cause ocular discharge, hypoactivity
  - when applied to rabbit eyes irritation and blistering of the conjunctiva was noted, blistering more or less disappeared within 7 days
  - dogs fed high doses of boron have been shown to have testicular atrophy and tubular malformations, decrease in liver and ovary rates were reported. Kidney and adrenal weights increased
  - developmental damage seen in rabbit fetuses, inc. mortality and organ alterations noted such as cardiovascular defects
  - does not biodegrade
  - For weatherproofing wood and fireproofing fabrics; as a preservative; manufacture of cements, crockery, porcelain, enamels, glass, borates, leather, carpets, hats, soaps, artificial gems; in nickeling baths; cosmetics; printing and dyeing, painting; photography; for

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[69] **Importance of calcium in modifying the acute toxicity of sodium sulphate to Hyalella azteca and Daphnia magna.**
Davies TD; Hall KJ
Environ Toxicol Chem. 2007, Jun; 26(6):1243-7. [Environmental toxicology and chemistry / SETAC] [PubMed]

[70] **Bioenergetic effects of sodium sulfate on the freshwater crustacean, Ceriodaphnia dubia.**
Soucek DJ
Ecotoxicology. 2007, Apr; 16(3):317-25. [Ecotoxicology (London, England)] [PubMed]

[71] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+10043-35-3

impregnating wicks; electric condensers; hardening steel. Also used as insecticide for cockroaches and black carpet beetles.

- potassium hydroxide[72]
  - very strong alkali
  - very damaging to eye
  - very corrosive to gi tract, acture poisoning cause severe gi pain and vomiting and diarrhea. Vomiting contains blood and mucosal lining'
  - can lead to death within 24 hours though recovery has occurred it is not complete and issues remain in patient
  - can be absorbed dermally
  - strongly irritating to resp tract when inhaled
  - application to the skin of mice caused tumors
  - considered hazardous substance, nationally notifiable when more than 100lb released
  - Principle uses of KOH include chemicals, particularly the production of potassium carbonate and potassium permaganate; pesticides, fertilizers, and other agricultural products; soaps and detergents; scrubbing and cleaning operations, e.g., industrial gases; dyes and colorants; and rubber chemicals.
- nitric acid[73]
  - an acute case of inhalation in 56yr old white male causes progressive respiratory distress and then respiratory failure and death
  - very debilitating when substance is added to eyes, can cause blindness
  - ingestion of material causes corrosion and gastric hemorrhage
  - skin contact causes immediate burns
  - single exposure of nitric acid showed no damage to rats
  - inc. levels in water will stimulate plankton and aquatic reed growth
  - will damage soil and has high movement in ground so contamination of ground water is probable
- Trisodium citrate dihydrate
  - Used in medical solutions/ treatment[74], i.e. could be used to flush iv lines[75]
  - Toxicologist?
- Pentapotassium triphosphate
  - Toxicologist?
- Sodium dodecylbenzenesulfonate
  - Skin irritant, emetic when swallowed
  - Irritant to resp organs

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[72] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1310-58-3

[73] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7697-37-2m

[74] **Oral rehydration solution containing trisodium citrate for treating severe diarrhea: controlled clinical trial**
Mazumder RN ; Nath SK ; Ashraf H ; Patra FC ; Alam AN
Br. Med. J.; VOL 302 ISS Jan 12 1991, P88-89, (REF 5) [IPA]

[75] **Efficacy of 1.4% sodium citrate in maintaining arterial catheter patency: comparison to heparin**
Clifton GD ; Branson P ; McCoy RA ; Wilkerson MA
ASHP Midyear Clinical Meeting; VOL 25 ISS Dec 1990, PP-422R, (REF) [IPA]

  - Low level feedings in rats have not produced systemic effects
  - Mechanism of death is unknown at high doses
  - Transient eye irritant in rabbits
  - High mobility in soil
  - Not expected to have an significant impact on aquatic systems or bio concentration in aquatic organisms
- ethanol[76]
  - vapor is irritant to eyes, liquid is also irritating to eyes but no permanent damage
  - ingestion can cause decreased involvement in frontal and posterior parts of the brain
  - cns depressant
  - cutaneous contact causes erythema
  - Developmental effects on foetus through mother(unknown if this occurs through household products)
  - Contact toxicologist also on the amount of applicability of research to household products-research primarily deals with alcohol ingestion therefore is of unknown use
  - Unlikely to be persistent in environment
  - naturally emitted from plants
  - volatilization from moist soil surfaces is important in biodegradation
- Pentasodium triphosphate
  - Toxicologist?
- sodium bicarbonate[77]
  - ingesation can cause partial damage, rupture to the stomach, in those with renal insufficiency-systemic alkalosis can occur
  - used as oral medication in humans, animals
  - mildly irritating to eyes
  - minor skin irritant
  - environmental problem? limited information found
- Isopropylamine dodecylbenzenesulfonate
  - Toxicologist?
- 2-amino-1-propanol
  - toxicologist?, information limited
- pentasodium trypolyphosphate[78]
  - ingestion in high doses can cause hypocalcemia, nausea, vomiting , death, esophageal stricture, hypotension, shock
  - estimated fatal dose is 50g
  - limited, toxicologist?
  - Induces vomiting in dogs
- Triclosan[79]

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[76] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+64-17-5

[77] **SODIUM BICARBONATE**
144-55-8 HSDB

[78] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7758-29-4

[79] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+3380-34-5

  - Can cause allergic dermatitis
  - Found in human milk
  - Absorbed cutaneously into the blood
  - If in water the substance will absorb into sediment and soil
  - Immobile in soil
- benzoyl peroxide[80]
  - unknown if carcinogen
  - dermal contact can produce stinging and burning
  - exposure associated with hepato cytotoxicity
  - upper resp irritation noted in workers
  - used commonly as acne formulation
  - 250 MG/KG fatal dose in adult mice
  - suggested to be carcinogenic dermally in mice and rats
  - low mobility in soil
  - in water will absorb into sediment
  - bioconcentration in organisms will be high
- carbomer[81]
  - used in artificial tear formulations
  - limited information available
  - toxicologist opinion?
- N,N-di(2-hydroxyethyl)lauramide[82]
  - Recorded to destroy sea urchin fertility
  - In sheep noted to cause erthyocyte hemolysis
  - Rats fed for 90 days with chemical showed no outward appearance though internal organs (liver, kidney) were enlarged. Erythrocyte level also lower
  - Very large doses (100 or 200 mg/kg) in rats have cause hepatic cancer
  - Mobility in soil is medium to high
  - Aquatic bio concentration absorption to sediment are not issues with chemical
- DMDM hydantoin[83]
  - Contains formaldehyde
  - Causes dermatitis
  - Also reportedly corrosive and irreversibly damaging to eyes
  - A liquid droplet aerosol was used on rats for four hours, during observation for next 14 days and dissection afterwards no damage was seen
  - No damage was found when solution was given to rats via gastric intubation

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[80] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+94-36-0
[81] http://www.medscape.com/medline/abstract/17415686
[82] **N,N-DI(2-HYDROXYETHYL)LAURAMIDE**
Synonym: **n n di 2 hydroxyethyl lauramide HSDB**
[83] **1,3-DIMETHYLOL-5,5-DIMETHYLHYDANTOIN**
Synonym: **dmdm hydantoin HSDB**

  - When dermally applied top rabbits, irritation was severe and animal was left lesions, necrosis
  - Genetically toxic when applied to hamster ovary cells
  - use as a cosmetic preservative and as a bactericide and fungicide in liquid detergents, fabric softeners, household cleaning products, soft soaps, paints, air fresheners, sealants and calks and paper coatings
  - high ground mobility
  - exists in particulate form in air
  - removed from atmosphere by wet or dry deposition
  - possibility of concentration in aquatic organisms is low
- Sodium chloride[84]
  - Salt
  - Low toxicity-main effects are usually increased blood pressure
  - Causes eye irritation and increased corneal permeability
  - Can causes electrolyte imbalance causing cell depolarization leading to organ necrosis, hemorrhage and eventual cardiovascular collapses and death
  - The estimated fatal dose is approximately 0.75 to 3.00 g/kg.
  - Information limited- Environmental effects seem to be minimal on less on a large scale in non salt water bodies
- Cocoamidopropyl betaine
  - Surfactant, also found in shampoos, toothpaste[85]
  - Form of betaine? (toxicologist?)
- Zinc chloride[86]
  - Unknown whether carcinogenic in humans
  - Caustic, corrosive material
  - Can cause delayed death with inhalation via destruction to lungs, esophagus, stomach, those that survive have permanent damage
  - Skin contact can cause ulceration
  - Lens opacities, iritis, and glaucoma may occur after splashing of concentrated (50%) solution.
  - 'Inadequate information' on whether chemical is carcinogenic though animal studies show creation of carcinomas
  - Genotoxic in mice, rats and was more pronounced in animals who were calcium deficient
  - No information on environmental effects, damage
- Sodium cumenesulphonate
  - No information available, toxicologist?
- Alcohols, C12-18, ethoxylated propoxylated
  - No information available, toxicologist?

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[84] **SODIUM CHLORIDE**
7647-14-5 HSDB

[85] **Oral mucosal desquamation caused by two toothpaste detergents in an experimental model.**
Herlofson BB; Barkvoll P
Eur J Oral Sci. 1996, Feb; 104(1):21-6. [European journal of oral sciences] [PubMed] TOXNET

[86] **ZINC CHLORIDE**
7646-85-7 HSDB

- Acrylic acid polymer/copolymer[87]
  - Low toxicity in animals
  - Minor eye irritant
  - Poorly degraded in environment
- (C13-C16)Alkyl ethoxylate sulfuric acid, ammonium saltethers, ammonium salts
  - Form of aylkl ethy oxalates
  - health concerns such as kidney, liver alteration, hormone disruption(both estrogen and testosterone) [88] in rats and environmental[89] -concerns specifically with chemical survival in water, does cause sexually abnormal development in fish
  - banned in Europe, under study in Canada and allowed in the usa
- Sodium hydroxide[90]
  - Studies widely show chemical is irritating and corrosive to surfaces it touches
  - Ingestion can be fatal\concern for children
  - Cannot reach female/male reproductive organs or foetus Damage to environment[water] depends or buffer level of ecosystem, ph level can be altered and toxicity in organisms is possible
- Sodium Hypochlorite[91]
  - Not cancer causing in animals, not studied in humans for carcinogencity
  - Ingestion causes pain and inflammation in areas of contact along with erosion of mucous membranes. Aspiration can cause respiratory failure
  - Addition to circulatory system will cause coma or cardiac arrest and/or death
  - Skin contact causes irritation in the form of vesicular eruptions, eczematoid dermatitis, onycholysis, hair may reversibly fall off Very hazardous to environement, may chlorinate water[92]
- sodium lauryl sulfate[93]
  - can cause allergic dermatological reactions
  - can cause drying effect to skin, irritational to eye
  - poison by intravenous, intraperitoneal, moderately toxic by ingestion

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[87] **Polycarboxylate polymers as used in detergents**
ECETOC working group
ECETOC Joint Assessment of Commodity Chemicals Vol:23 (1993) 49 p
[88] http://envirostats.files.wordpress.com/2007/08/endocrine-disruptors.pdf
[89] http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl2-lsp2/nonylphenol/nonylphenol_2_e.html
[90] **Sodium hydroxide**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (2004) 112
[91] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7681-52-9
[92] **Natriumhypochlorit**
Anonymous
Toxikologische Bewertung. Heidelberg, Berufsgenossenschaft der chemischen Industrie Vol:175 (1991) 49 p [German] [RISKLINE] TOXNET
[93] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+151-21-3

- when fatal poisoning was caused in animals, though symptoms seen were only diarrhea and intestinal bloating
- not irritating in ingestion if in low enough doses
- in ambient atmosphere the chemical exists in a particulate phase
- no mobility
- potential for bioconcentration in organisms is moderate
- Used in shampoos, hairdyes, toothpastes, hand dishwashing detergents; used in many cleaning compounds because of cleaning ability, mildness and foaming capability., Food additive (emulsifier and thickener)

- hydrogen peroxide[94]
  - unknown carcinogenicity in humans though proven carcinogenic in animals
  - if ingested, possibly severe gi damage can be done
  - can be very painful if gotten in eyes
- diethylene glycol monobutayl ether[95]
  - reddening when dermal contact was made, not irritating
  - various symptoms observed: cns depression, renal failure, muscular skeletal pain, organ lesions,
  - not corrosive to resp tract
  - lethal dose in humans: 1 ml/kg
  - effects in animals are hemolytic: ie. Splenomegaly, anemia, hemoglobinuria, kidney damage
  - no effects on sexual organs though there was a noted decrease in maternal body weight gain in rats
  - very high soil mobility, becomes gas in atmosphere with a halflife of 7.2 hours
  - not likely to absorb into soil, surfaces in water

-furniture and floor polishes
-metal polishes
-mothballs

- naphthalene[96]
- paradichlorobenzene[97]
  - both chemicals are used primarily in most of moth ball products on the market
  - dichlorobenzene linked to decreased lung function, could be issue for those resp disorders, has been linked to causing asthma[98]
  - they work by creating a toxic odor for moths
  - possible carcinogenesis in both, proven in animals, not humans(respiratory tumors in rats,).

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[94] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7722-84-1

[95] **DIETHYLENE GLYCOL**
111-46-6 HSDB

[96] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+91-20-3

[97] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+106-46-7

[98] Elliott, L. *Environmental Health Perspectives*, August 2006; vol: 114 pp. 1210-1214.

    - Very toxic and can cause damage if exposure to skin, eyes, throat (if inhaled), internal organs(if swallowed), can cause hemolytic anemia. Long term inhaling can cause liver, kidney damage.
    - Very dangerous for fetus, infant
- cedar wood[99]
    - alternative, safe, but more expensive(is this viable here?)
- air tight containers
    - another option[100]

-carpet cleaner
-dusting spray
-tub/tile cleaners
-upholstery cleaner
-laundry detergents

- 2-aminoethanol(MEA)[101]
    - Minor irritant to human skin
    - Inhalation immediately causes dyspnea, asthma and acute liver damage and inflammation
    - Rats, mice, and rabbits exposed to ethanolamine by daily inhalation exhibited respiratory tract irritation; histopathological examinations also showed some non specific mild degenerative changes of the liver and kidneys.
    - Developmentally/reproductively toxic in chicken eggs though other studies show a lack of developmentally/reproductive toxicity
    - Minor genotoxic effects in human lymphocytes, otherwise genotoxic effect not seen
    - Very high mobility in soil
    - Low bioconcentration in aquatic creatures
    - Will most likely not absorb into sediments, soil
- sodium citrate[102]
    - toxicity causes tetany, alkalosis and eventual death
    - very limited information existing
- sodium aluminosilicate[103]
    - An irritant to skin, eyes and mucous membranes
    - Very limited toxic effects even at high doses on aquatic life
    - No environmental impact suggested
- Sodium dodecylbenzenesulfonate[104]
    - Skin irritant, emetic when swallowed
    - Irritant to resp organs
    - Low level feedings in rats have not produced systemic effects

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[99] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+8000-27-9
[100] http://www.checnet.org/healthehouse/chemicals/chemicals-detail-print.asp?Main_ID=292
[101] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+141-43-5m
[102] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+68-04-2
[103] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1344-00-9
[104] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+25155-30-0

  - Mechanism of death is unknown at high doses
  - Transient eye irritant in rabbits
  - High mobility in soil
  - Not expected to have an significant impact on aquatic systems or bio concentration in aquatic organisms
- C12-15 Pareth 11
  - Form of aylkl ethy oxalates
  - health concerns such as kidney, liver alteration, hormone disruption(both estrogen and testosterone) [105] in rats and environmental[106] -concerns specifically with chemical survival in water, does cause sexually abnormal development in fish
  - banned in Europe, under study in Canada and allowed in the usa
- Benzenesulfonic acid,[107](c10-c16 alkyl derivatives)
  - limited impact in humans and environment though could impact daphnids/water fleas (cladoceran)(issue for county?)
- sodium citrate[108]
  - toxicity causes tetany, alkalosis and eventual death
  - very limited information existing
- sodium carbonate[109]
  - irritation occurs in large quantities
  - damage to mucous membranes can occur with a concentrated amount
  - irritating to eyes not considered hazardous to environment though chemical can alter of the ph of an aquatic eco-system[110]
- Subtilisin[111]
  - Biodegrable, high water solubility thereby having minimal environmental impact
  - Can cause mild dermatological rash, besides this impact is minimal to human health
- Adipic acid[112]
  - Exposure causes respiratory irritation
  - Also irritating to skin and eyes
  - moderate to severe eye irritation in rabbits
  - in atmposphere it exists as both particle and vapor
  - very high soil mobility
  - bio concentration into organisms is low

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[105] http://envirostats.files.wordpress.com/2007/08/endocrine-disruptors.pdf

[106] http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl2-lsp2/nonylphenol/nonylphenol_2_e.html

[107] Anonymous, benzene, c10-c16 alkyl derivatives, screening information data set for high production volume chemicals

[108] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+68-04-2

[109] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+497-19-8

[110] anonymous, (2003) sodium carbonate, Screening Information Data Set for High Production Volume Chemicals. Found in toxnet.nlm.nih.gov

[111] **Savinase'- Proteolytic enzymes in detergents**
Anonymous
NICNAS: Priority existing chemical assessment report Vol:2 (1993) pp 79 [RISKLINE]

[112] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+124-04-9

- Grotan BK[113]
  - can cause dermatological problems: rashes, eczema, vesicular lesions,
  - ingestion can cause alkali burns in oropharynx/esophagus
  - not very harmful-minimum fatal dose would be about one pint for 70kg person
  - minimal environmental impact though a large scale induction of triethanolamine into the water system can alter ph[114]
- sodium lauryl ether sulfate[115]
  - surfactant and cleansing agent
  - mild to moderate eye irritant
  - 'safe' ingredient
  - used in cosmetics, shampoos
  - low mobility in soil
  - will absorb into sediments, will not bioconcentrate in aquatic organisms
- WinSurf NLS-90
  - Unknown
  - Toxicologist?
- sorbitol[116]
  - low toxicity, tissues changes return to normal after end of exposure
  - limited info on animal testing, results show minimal effects
  - used as sweetener, naturally found in fruit
  - very high soil mobility
  - readily biodegraded
- sodium gluconate[117]
  - readily biodegradable
  - found to have no effect in animal studies, fish studies
  - used in meat, milk other foods
- borax[118]
  - hair, respiratory irritant
  - mild eye irritant
  - Ingestion of 5 to 10 g by young children can cause severe vomiting, diarrhea, shock and death.
  - Ingestion of borax by rats, produced significant decreases in body weight; in the weights of the testes, seminal vesicles, spleen, right femur; and in the levels of plasma triglycerides. At the highest dose level, spermatogenesis was impaired.

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[113] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+102-71-6

[114] **Triethanolamine**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (1997) 2 p [RISKLINE]

[115] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+3088-31-1

[116] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+50-70-4

[117] **Gluconic acid and its derivatives**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (2006) 231 TOXNET

[118] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1303-96-4

  - Further studies also show decreased ovulation and spermatogenesis when added to rat diet
  - At high doses cytotoxic and considered a weak mutagen
  - When added to dropsophilla lifecycle the largest amount of boron were found in the larvae stages
  - Naturally occurring in environment
  - Very low mobility
  - Concentrates in plants

- calcium chloride[119]
  - very strong skin and mucous membrane irritant, has been recorded to cause skin to peel and perforation of the nasal septum
  - eye contact with dust has caused transient corneal injury
  - used as iv solution for hypocalcemic tetany
  - Rock bass were killed by concentration of 555 mg/l/168 hr in tap water.
  - Does not biodegrade or bioaccumulate
  - Environmental information limited
- Sodium nonanoyloxy benzene sulfonate
  - Information unknown-toxicologist
- sodium silicate[120]
  - irritation to skin and corneal damage noted, if swallowed can cause v/d
  - chemical can asphyxiate mussels in ecosystem
  - renal lesions noted in dogs after being fed food containing sodium silicate [121]
  - considered toxic in freshwater cladoceran population[122]
- sodium sulfate
  - toxic in large enough quantities to marine eco system, can be buffered with calcium[123]
  - behavioral effects on Ceriodaphnia dubia[124]

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[119] **CALCIUM CHLORIDE**
10043-52-4 HSDB

[120] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1344-09-8

[121] **Final report on the safety assessment of Potassium Silicate, Sodium Metasilicate, and Sodium Silcate**
Anonymous

[122] **Toxicity of laundry detergent components to a freshwater cladoceran and their contribution to detergent toxicity.**
Warne MS; Schifko AD
Ecotoxicol Environ Saf. 1999, Oct; 44(2):196-206. [Ecotoxicology and environmental safety] [PubMed]

[123] **Importance of calcium in modifying the acute toxicity of sodium sulphate to Hyalella azteca and Daphnia magna.**
Davies TD; Hall KJ
Environ Toxicol Chem. 2007, Jun; 26(6):1243-7. [Environmental toxicology and chemistry / SETAC] [PubMed]

[124] **Bioenergetic effects of sodium sulfate on the freshwater crustacean, Ceriodaphnia dubia.**
Soucek DJ
Ecotoxicology. 2007, Apr; 16(3):317-25. [Ecotoxicology (London, England)] [PubMed]

  - health effects unknown, perhaps minimal
- cellulase
  - asthma causing
  - limited information, otherwise
- Sodium perborate tetrahydrate[125]
  - Not toxic to development when studied on rats
  - In large quantities can be acutely toxic to aquatic organisms[126]
- Alkyl (C10-C16) benzenesulfonic acid, sodium salt[127]
  - Detergent surfactant
  - Rapid biodegradation
  - Little potential to bio concentrate
  - Not acutely toxic but harmful to daphnids
- Alcohol ethoxysulfate salt[128]
  - Carcinogenic
  - Causes limited irritation
  - Limited information
- sodium tetraborate[129]
  - An intravenous dose of 14-20 g of sodium borate was administered for the purposes of neutron capture therapy to 10 patients, who experienced immediate nausea, vomiting, defecation, and occasionally seizures and respiratory depression.
  - Inhalation will cause Cough, shortness of breath, sore throat, nose bleed
  - Moderate irritation to skin and eyes
  - used in various cosmetic products, including make-up, skin and hair care preparations, deodorants, moisturizing creams, breath fresheners, and shaving creams; concentrations may be up to 5%
  - naturally occurring, deposited on areas after evaporation from salt lakes
  - accumulates in plants
  - mobility is slow
- sodium xylenesulfonate
  - of low toxicity
  - limited information existing..toxicologist?

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[125] **Rat embryo-fetal development study on sodium perborate tetrahydrate.**
Bussi R; Chierico G; Drouot N; Garny V; Hubbart S; Malinverno G; Mayr W
Teratology 1996 May;53(5):26A [DART]

[126] **Toxicity of laundry detergent components to a freshwater cladoceran and their contribution to detergent toxicity.**
Warne MS; Schifko AD
Ecotoxicol Environ Saf. 1999, Oct; 44(2):196-206. [Ecotoxicology and environmental safety] [PubMed]

[127] **Benzene, C10-C16 alkyl derivatives**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (2004) 79 pTOXNET

[128] **Letter to USEPA Regarding Information Developed on the Presence of 1,4-Dioxane in Two Specific Products, the Sodium and Ammonium Salts of Alcohol Ethoxysulfates (Sanitized).**
Govt Reports Announcements & Index (GRA&I), Issue 26, 2007 [NTIS] TOXNET

[129] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1330-43-4

- sodium alkylbenzene sulfonate[130]
  - fed to rats for 90 days…no harm reported even after dissection
  - very limited info, possibly harmless
- sodium sulfate
  - toxic in large enough quantities to marine eco system, can be buffered with calcium[131]
  - behavioral effects on Ceriodaphnia dubia[132]
  - health effects unknown, perhaps minimal
- Sodium hydroxide[133]
  - Studies widely show chemical is irritating and corrosive to surfaces it touches
  - Ingestion can be fatal\concern for children
  - Cannot reach female/male reproductive organs or foetus
  - Damage to environment[water] depends or buffer level of ecosystem, ph level can be altered and toxicity in organisms is possible
- Ethanol [134]
  - vapor is irritant to eyes, liquid is also irritating to eyes but no permanent damage
  - ingestion can cause decreased involvement in frontal and posterior parts of the brain
  - cns depressant
  - cutaneous contact causes erythema
  - Developmental effects on foetus through mother(unknown if this occurs through household products)
  - Contact toxicologist also on the amount of applicability of research to household products-research primarily deals with alcohol ingestion therefore is of unknown use
  - Unlikely to be persistent in environment
  - naturally emitted from plants
  - volatilization from moist soil surfaces is important in biodegradation
- sulfuric acid[135]
  - carcinogenic
  - destroys enamel of teeth

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[130] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+68411-30-3

[131] **Importance of calcium in modifying the acute toxicity of sodium sulphate to Hyalella azteca and Daphnia magna.**
Davies TD; Hall KJ
Environ Toxicol Chem. 2007, Jun; 26(6):1243-7. [Environmental toxicology and chemistry / SETAC] [PubMed]

[132] **Bioenergetic effects of sodium sulfate on the freshwater crustacean, Ceriodaphnia dubia.**
Soucek DJ
Ecotoxicology. 2007, Apr; 16(3):317-25. [Ecotoxicology (London, England)] [PubMed]

[133] **Sodium hydroxide**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (2004) 112

[134] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+64-17-5

[135] **SULFURIC ACID**
7664-93-9 HSDB

  - mild respiratory irritation
  - corrosion, causes necrosis quickly
  - contact with eyes causes blindness
  - respiratory contact with cause serious damage to lungs
  - found naturally in volcanic gas
  - toxic to environment
  - high mobility in soil, dissolves soil in process
  - component of acid rain
  - also known as battery acid
- tryethylene glycol[136]
  - reportedly not harmful to skin, eyes, resp system,/ not a health hazard to humans whatsoever
  - basically harmless in animals except in very large doses that can delay developmental growth and cause kidney enlargment
  - biodegradation is the only form of destruction of this chemical
  - it is highly mobile in soil and has a long half-life in water
  - its effects on aquatic organisms though are considered minimal
- Sodium dihydrogen citrate
  - Used as alternative to heparin flushes
  - Used for lead treatment
  - Limited info, possibly harmless
- citronella oil
  - used in nonddt repellants
  - candles
  - other information very limited
- glycerine[137]
  - Adverse effects following oral administration of glycerin include mild headache, dizziness, nausea, vomiting, thirst, and diarrhea.
  - Severe dehydration, cardiac arrhythmias, and hyperosmolar nonketoic coma have been reported and may be fatal.
  - Osmotic chemical
  - Moderate injury to eyes, irritant but no permanent damage
  - Very high mobility in soil
  - Very high and very quick biodegradation
  - Will not adsorb in sediment or concentrate in fish and aquatic organisms
- savinase[138]
  - causes dermatitis
  - irritant at higher levels
  - 'unlikely to prevent adverse effects in humans'

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[136] **TRIETHYLENE GLYCOL**
112-27-6 HSDB

[137] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+56-81-5

[138] **'Savinase'- Proteolytic enzymes in detergents**
Anonymous
NICNAS: Priority existing chemical assessment report Vol:2 (1993) pp 79 TOXNET

  - biodegrades quickly
  - respiratory sensitizer
  - non-toxic to fish
- Termamyl 330L enzyme
  - Unknown
- Stoddard solvent[139]
  - Inadequate info on carcinogenicity
  - Men exposed to vapor for 30 minutes showed no adverse effects
  - Contact produces follicular dermatitis
  - Aspiration causes chemical pneumonia
  - Preexisting liver disease in users could be problem because of decreased metabolism
- Terpene
  - Component of turpentine
  - Information unknown
- aluminum silicate[140]
  - neurotoxic in animals
  - of low toxicity
  - not associated with illness in humans
  - animal testing showed minimal effects\
  - mutagenic to invitro cells
  - neurotoxic in animals
- Nonoxynol[141]
  - One case of dermatitis
  - Another study showed no irritation or sensitivity
  - Used as cosmetic product
- Sodium undecylbenzenesulfonate
  - Unknown, not found
- Sodium perborate monohydrate[142]
  - Use in denture cleaners has caused corrosive injuries to the mouth and esophagus
  - 0.1-0.5 g/kg. Is a fatal dose
  - irritant
  - able to produce mutagenic changes in-vitro
- Sodium tridecylbenzenesulfonate[143]
  - Sensitization, allergic reaction is rare
  - Can cause disease of resp system
  - 'moderately toxic'

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[139] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+8052-41-3

[140] ALUMINUM, ELEMENTAL
CASRN: 7429-90-5 HSDB

[141] **NONOXYNOL**
26027-38-3 HSDB

[142] **SODIUM PERBORATE**
7632-04-4 HSDB

[143] **SODIUM TRIDECYLBENZENE SULFONATE**
CASRN: 26248-24-8 HSDB

  - resistance to being broken down by microorganisms
  - mild irritant on rabbit eyes
  - mechanism of cause of death in animals at high doses..is unknown

- all purpose cleaners/multi purpose cleaners
  - Sillica
    - Carcinogenesis found in industrial studies (specifically lung cancer)[144]
    - Environmental impact is considered minor when taking into account
    - the amount of naturally occurring silica in both water and land[145]
  - sodium carbonate[146]
    - irritation occurs in large quantities
    - damage to mucous membranes can occur with a concentrated amount
    - irritating to eyes not considered hazardous to environment though chemical can alter of the ph of an aquatic eco-system[147]
  - - Sodium dodecylbenzenesulfonate
    - Skin irritant, emetic when swallowed
    - Irritant to resp organs
    - Low level feedings in rats have not produced systemic effects
    - Mechanism of death is unknown at high doses
    - Transient eye irritant in rabbits
    - High mobility in soil
    - Not expected to have an significant impact on aquatic systems or bio concentration in aquatic organisms
  - 2-Butoxyethanol[148]
    - widely used solvent found in paints and varnishes
    - readily absorbed via inhalation, dermal contact and oral exposure
    - possible carcinogen(further studies needed to actually create proof)
    - reportedly irritating to eyes and skin
    - reportedly hemolytic effects in animals though humans seem resistant to hemolysis
    - causes reproduction and developmental alterations in animals
    - when in atmosphere becomes vapor, half life is 16hours
    - high mobility in soil
    - biodegrades rapidly in water
    - low risk of being absorbed by aquatic organisms
  - propane[149]
    - can depress cns system at very high levels

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[144] **Silica**
Anonymous
IARC Monographs on the evaluation of the carcinogenic risk of chemicals to humans
[145] **Synthetic Amorphous Silica**
Anonymous
ECETOC Joint Assessment of Commodity Chemicals Vol:51 (2006) 221 p
[146] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+497-19-8
[147] anonymous, (2003) sodium carbonate, Screening Information Data Set for High Production Volume Chemicals. Found in toxnet.nlm.nih.gov
[148] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+111-76-2
[149] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+74-98-6

  - after exposure to person it can accumulate in breast milk
  - volatile
  - produces cns depression in various kinds of animals- specifically respiratory depression and distress
  - can also cause skin burns
  - can stay as atmosphere as part of smog for high amount of time since sunlight does not break it down
  - not a significant problem for aquatic ecosystem unless in high amounts since it takes awhile to breakdown
- isobutane[150]
  - chemical found in air in high traffic areas, service stations, insect sprays, window and glass cleaners, personal spray deodearants, rug and upholstery cleaners
  - in very high doses it causes respiratory /cardiac issues in animals
  - human studies suggest it to be minimally harmful or even perhaps harmless
  - biodegradable and has short half life. Does not accumulate in soil or in mammals.
- sodium carbonate[151]
  - irritation occurs in large quantities
  - damage to mucous membranes can occur with a concentrated amount
  - irritating to eyes not considered hazardous to environment
- calcium carbonate
  - inhalation/nasal exposure leads to minimal irritational symptoms
  - if absorption is high enough systemic and renal effects could occur.
  - Used in antacids and use in antacids has been associated with hypercalcemia and medical issues relating to hypercalcemia, including emergency pregnancies
  - Association with cancer in industrial setting
  - Adding dust to rabbits eyes or injecting rabbit with amount of alcium carbonate causes very little effect
  - carcinogenic in animals
  - causes low ph in aquatic species
  - toxic at high enough levels
  - pesticide, food additive, industrial finishes, coatings, Manufacturer of paint, rubber, plastics, paper, dentifrices, ceramics, putty, polishes, insecticides, inks, shoe dressings; as filler in production of adhesives, matches, pencils; crayons, linoleum, insulating compds, welding rods. cosmetics, pharmaceuticals, antibiotics; removing acidity of wines. in analytical chemistry for detecting and determining halogens in organic combinations; with ammonium chloride for decomposing silicates; preparing calcium chloride soln for standardizing soap soln; for water analyses.
- oil of orange[152]

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[150] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+75-28-5
[151] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+497-19-8

  - no sensitization, no irritation produced in humans/animals
- C12-15 Pareth 11
  - Form of aylkl ethy oxalates
  - health concerns such as kidney, liver alteration, hormone disruption(both estrogen and testosterone) [153] in rats and environmental[154] -concerns specifically with chemical survival in water, does cause sexually abnormal development in fish
  - banned in Europe, under study in Canada and allowed in the usa
- limonene[155]
  - occurs naturally in trees, bushes
  - food additive
  - skin irritant
  - eye irritant
  - in rats induces renal tumors
  - high acute toxicity to chemical found in fish
  - low mobility
  - risk bioconcentration in aquatic organisms is high
- coconut diethanolomide
  - information limited/unknown
- feldspar minerals[156]
  - limited info
  - known to have caused illness in germany by inhalation from local factory
- oxalic acid[157]
  - very strong poison, as little as 5g has been known to be fatal
  - neurotoxic
  - application to eye causes severe burns
  - like most acids when consumed it causes serious corrosion followed by circulatory shock and death
  - not a significant threat to the environment
- pentasodium tripolyphosphate
  - large ingestion causes vomiting, nausea, diarrhea…can lead to esophageal stricture
  - damage to eye contact is moderately severe

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[152] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+8008-57-9

[153] http://envirostats.files.wordpress.com/2007/08/endocrine-disruptors.pdf

[154] http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl2-lsp2/nonylphenol/nonylphenol_2_e.html

[155] **(D)-LIMONENE**
5989-27-5 HSDB

[156] **ODOR CAUSED MASS ILLNESS AROUND A PLANT PRODUCING QUARTZ AND FELDSPAR BY FLOTATION**
LERCHER P ; KOFLER W
SEEMAYER, N. H. AND W. HADNAGY (ED.). ENVIRONMENTAL HYGIENE; FIRST EUROPEAN MEETING OF ENVIRONMENTAL HYGIENE, DUESSELDORF, WEST GERMANY, MAY 21-22, 1987. XIV+214P. SPRINGER-VERLAG: BERLIN, WEST GERMANY; NEW YORK, NEW YORK, USA. ILLUS. ISBN 3-540-19354-5; ISBN 0-387-19345-5.; 0 (0). 1988. 175-178. [BIOSIS] TOXNET

[157] **OXALIC ACID**
144-62-7 HSDB

  - admin of chemical in diet decreased bone, liver and spleen contents of iron and increased the bone deposition of calcium
  - environmental information unknown
- 3-Isodecyloxypropaneamine, ethoxylated
  - unknown
- Benzylethyldimethylammonium chloride
  - Unknown
- Alkyl(C12-16)dimethylbenzylammonium chloride
  - Unknown/limited info
- Sillica
  - Carcinogenesis found in industrial studies (specifically lung cancer)[158]
  - Environmental impact is considered minor when taking into account the amount of naturally occurring silica in both water and land[159]
- tetrasodium edta[160][161][162]
  - when added to eye causes change in acid base balance and permanent damage
  - intra venous application can cause severe hypocalcemia leading to tetany and death
  - found to be genotoxic and fetotoxic in mice
  - possible carcinogen
  - limited info on environmental effects(toxicologist)
- dipropylene glycol monomethyl ether[163]
  - no irritation found in skin patch tests
  - irritating to respiratory passages though no organic injuries noted
  - 0.5-0.6 ML/KG. Is the dose necessary via iv to kill a dog, death by respiratory arrest via cns depression, gastric corrosion noted
  - low toxicity in general with animals
  - when applied to eyes in rabbits it causes mild transitory reaction/irritation

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[158] **Silica**
Anonymous
IARC Monographs on the evaluation of the carcinogenic risk of chemicals to humans
[159] **Synthetic Amorphous Silica**
Anonymous
ECETOC Joint Assessment of Commodity Chemicals Vol:51 (2006) 221 p
[160] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+64-02-8
[161] **Ethylenediaminetetraacetic acid, Tetrasodium ethylenediamintetraacetate (H4EDTA/Na4EDTA) (May 1995)**
Anonymous
Beratergremium fuer umweltrelevante Altstoffe (BUA) Vol:168 (1997) 233 p
[162] **Tetrasodium Ethylenediaminetetraacetate (Na4EDTA)**
Anonymous
European Union risk assessment report Vol:51 (2004) 160 p
[163] **DIPROPYLENE GLYCOL MONOMETHYL ETHER**
Synonym: **dipropylene glycol methyl ether**
34590-94-8 HSDB

  - constituent of a variety of industrial and consumer products including hydraulic brake fluid, solvents, paints, dyes, household cleaners, cosmetics, and pesticide formulations.
  - Highly mobile and will leach into ground water, otherwise environmental impact is minimal
- Sodium Hypochlorite[164]
  - Not cancer causing in animals, not studied in humans for carcinogencity
  - Ingestion causes pain and inflammation in areas of contact along with erosion of mucous membranes. Aspiration can cause respiratory failure
  - Addition to circulatory system will cause coma or cardiac arrest and/or death
  - Skin contact causes irritation in the form of vesicular eruptions, eczematoid dermatitis, onycholysis, hair may reversibly fall off Very hazardous to environement, may chlorinate water[165]
- octophenoxypoly (ethoxyethanol)
  - ?? limited info, toxicologist?
- 2-Butoxyethanol[166]
  - widely used solvent found in paints and varnishes
  - readily absorbed via inhalation, dermal contact and oral exposure
  - possible carcinogen(further studies needed to actually create proof)
  - reportedly irritating to eyes and skin
  - reportedly hemolytic effects in animals though humans seem resistant to hemolysis
  - causes reproduction and developmental alterations in animals
  - when in atmosphere becomes vapor, half life is 16hours
  - high mobility in soil
  - biodegrades rapidly in water
  - low risk of being absorbed by aquatic organisms
- Triethanolamine[167]
  - can cause dermatological problems: rashes, eczema, vesicular lesions,
  - ingestion can cause alkali burns in oropharynx/esophagus
  - not very harmful-minimum fatal dose would be about one pint for 70kg person
  - minimal environmental impact though a large scale induction of triethanolamine into the water system can alter ph[168]

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[164] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7681-52-9

[165] **Natriumhypochlorit**
Anonymous
Toxikologische Bewertung. Heidelberg, Berufsgenossenschaft der chemischen Industrie Vol:175 (1991) 49 p [German] [RISKLINE] TOXNET

[166] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+111-76-2

[167] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+102-71-6

[168] **Triethanolamine**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (1997) 2 p [RISKLINE]

- Alkyl (C12-C18) dimethyl benzyl ammonium chloride
  - Ethane? Toxicologist info?
- - propane[169]
  - can depress cns system at very high levels
  - after exposure to person it can accumulate in breast milk
  - volatile
  - produces cns depression in various kinds of animals- specifically respiratory depression and distress
  - can also cause skin burns
  - can stay as atmosphere as part of smog for high amount of time since sunlight does not break it down
  - not a significant problem for aquatic ecosystem unless in high amounts since it takes awhile to breakdown
- - isobutane[170]
  - chemical found in air in high traffic areas, service stations, insect sprays, window and glass cleaners, personal spray deodearants, rug and upholstery cleaners
  - in very high doses it causes respiratory /cardiac issues in animals
  - human studies suggest it to be minimally harmful or even perhaps harmless
  - biodegradable and has short half life. Does not accumulate in soil or in mammals.
- Butane[171]
  - Dec. cns when airborne, can cause death with high enough concentrations
  - In low airborne concentrations it can cause drowsiness
  - Has been noted to cause myoclonus and severe frost bite when used in cleaners
  - Possible developmental effects in foetus, has been found in breast milk
  - environmentally it is an airborne pollutant and has a long half life when introduced to land or water. It has a moderate chance to stay within aquatic mammals
- ammonia[172]
  - very hazardous to eyes
  - irritation to respiratory tract is moderate..i.e inflammation of lungs generally occurs
  - harmful as gas
  - large amounts in a body can cause encephalopathy

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[169] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+74-98-6
[170] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+75-28-5
[171] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+106-97-8
[172] **AMMONIA**
7664-41-7 HSDB

  - Ammonia is strongly adsorbed on soil, and on sediment particles and colloids in water. This adsorption results in high concentrations of sorbed ammonia in oxidized sediments.
  - Limited info, doesn't seem to pose much of a threat environmentally
- Isopropanol[173]
  - 8 oz(240 ml), but as little as 20ml in water can produce symptoms
  - cns depressant
  - possible cancer risk, report of paranasal cancers at plant where isopropanol was manufactured
  - Severe poisoning presents early with deep coma, resp depression, and hypotension
  - Found in breast milk in urban centers
  - Very high soil mobility
  - Low rate of bioconcentration in aquatic organisms
  - Water is a key form of biodegradation
- ammonium chloride[174]
  - fumes are respiratory, eye irritant
  - causes acid/base imbalance
  - symptoms include rash, headache, hyperventilation, bradycardia, progressive drowsiness, mental confusion, and phases of excitement alternating with coma. Calcium-deficient tetany, hyperglycemia, glycosuria, twitching, hyperreflexia, and EEG abnormalities have also been reported. Most of these adverse effects are secondary to ammonia toxicity resulting from inability of the liver to convert the ammonium ion to urea.
  - Not considered environmental issues
- sodium metasillicate[175]
  - 'most alkaline and corrosive substance in phosphate free products'
  - case study of causing recurrent ulcerative lesions through contact
  - when fed orally to dogs it caused polyuria,polydipsia, soft stools and renal lesions
  - no environmental information found
-
- O benzyl P chloro-phenol[176]
  - Associated with causing hyperbillirubinemia in children
  - 'moderately toxic'
  - when applied to rabbit eyes reaction was severe to cause blindness
  - 'slight' mobility in soil
  - 'moderate' ability to bioconcentrate in aquatic organisms
- Sodium lauriminodipropionate
  - Very limited data

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[173] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+67-63-0

[174] **AMMONIUM CHLORIDE**
CASRN: 12125-02-9 HSDB

[175] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+6834-92-0

[176] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+120-32-1

  - Prevented from being used as a cosmetic because of limited testing/data[177]
- Grotan BK[178]
  - can cause dermatological problems: rashes, eczema, vesicular lesions,
  - ingestion can cause alkali burns in oropharynx/esophagus
  - not very harmful-minimum fatal dose would be about one pint for 70kg person
  - minimal environmental impact though a large scale induction of triethanolamine into the water system can alter ph[179]
- citric acid[180][181]
  - used in food, drink preparations and also pharmaceutical creations and cleaners
  - mildly irritating to gi tract after consuming, created nausea, diarrhea and indigestion
  - inhalation causes coughing
  - large enough intravenous doses cause hypocalcaemia and eventually cardiac arrest
  - very irritating and damaging to eyes due to acidic content of substance
  - can cause erosion of dental enamel
  - high enough doses are cytotoxic, in animals when applied to the tongue in high doses it is ulcerative and causes lesions
  - administration to rats can cause ataxia followed by other motor issues and then leads to respiratory and cardiac failure
  - not carcinogenic or reprotoxic or developmentally toxic
  - biggest is irritation to upper respiratory tract, eyes, skin
  - highly mobile in soil
  - low acute toxicity to marine organisms
  - is not considered to be hazard to environment, quick biodegradableness
- sodium phosphate
  - unknown perhaps limited toxicity (toxicologist
  - used as tablets for colon cleanser for colonoscopy
- sodium sulfite[182]
  - irritating to stomach lining if swallowed
  - could be dangerous to asthmatics

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[177] **Final report on the safety assessment of Sodium Lauraminopropinate and Sodium Lauraminodipropionate**
Anonymous
Int J Toxicol Vol:16, Suppl. 1 (1997) pp 1-9 TOXNET
[178] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+102-71-6
[179] **Triethanolamine**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (1997) 2 p [RISKLINE]
[180] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+77-92-9
[181] http://www.chem.unep.ch/irptc/sids/OECDSIDS/77929.pdf
[182] **SODIUM SULFITE**
7757-83-7 HSDB

  - primarily a respiratory irritant
  - considered 'moderately toxic'
  - limited evidence for carcinogenicity in animals
  - limited environmental information
  - Experimentally, large doses of sodium sulfite have been shown to cause retarded growth, nerve irritation, atrophy of bone marrow, depression, & paralysis.
- acetone[183]
  - natural occurring ketone body
  - low toxicity
  - reproductive toxicity shown in rats-i.e. testicular and sperm changes
  - vapor can cause CNS depression, cardiorespiratory failure and death.
- 2 hexoxyethanol[184]
  - can produce CNS depression
  - categorized as 'moderately toxic'
  - skin and eye contact can be very serious
  - severe eye damage when tested on rabbits
  - environmental info unknown
- Naphtha[185]
  - Naphtha is refined, partly refined, or unrefined petroleum products produced by the distillation of natural gas and/or curde oil.
  - In workers exposed to a glue solvent, indications of slight renal tubular effects were reported.
  - Petroleum naphtha vapor is a CNS depressant as well as an irritant of the mucous membranes and respiratory tract
  - Correlation between pulmonary and upper respiratory tract mucous membrane symptoms.
  - Women who had been in contact with petroleum solvents were found to have a reduced estrogen level in the blood
  - Found in breast milk in areas of environmental exposure
  - High mobility
  - In water will not absorb into sediment, soil
  - In large quantities it will not biodegrade
  - Moderate risk of bioconcentration in aquatic organisms
- Methanol
  - Naturally occurs in humans. animals, plants
  - Humans and primates have much more trouble metabolizing chemical than rats,dogs,rabbits and other smaller mammals
  - Cause of death in humans is metabolic acidosis and neuronal toxicity
  - Found to be reproductive and developmentally toxic in rats

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[183] **ACETONE**
CASRN: 67-64-1 HSDB
[184] **2-HEXOXYETHANOL**
CASRN: 112-25-4 HSDB
[185] **NAPHTHA**
CASRN: 8030-30-6 HSDB

  - First symptom of toxicity is ocular changes
  - 'Methanol is of low toxicity to aquatic organisms, and effects due to environmental exposure to methanol are unlikely to be observed, except in the case of a spill'.
- Polyethylene glycol[186]
  - Very low toxicity
  - No harmful effect to eye /skin
  - Environmental info unknown but perceived to be low
- pine oil(alpha terpineol)[187]
  - irritating to eyes and mucous membranes. Produce hemorrhagic gastritis when ingested. Systemic effects include weakness and central nervous depression, with hypothermia and respiratory failure
  - found in breast milk in 1 in 8 women who reside in industrial areas
  - genotoxic in bacteria tests
  - low mobility
  - volatilization from moist soil is high
  - may adsorb to suspended solids and sediment
  - high likelihood of concentration in aquatic organisms
- 1-propoxy 2-propanol[188]
  - severe injury on eye contact
  - At high doses the /rats/ developed CNS depression & some evidence of kidney injury. The /rats/ that died did so within 24 hr.
  - Very high mobility in soil
  - Not expected to bioconcentrate in aquatic organisms or adsorb to soil and sediment
- oleic acid[189]
  - irritating to skin and eyes
  - Oleic acid in human blood reversibly altered the shape of erythrocytes, led to the reduction of viscosity of the blood in vitro, and reduced the erythrocyte sedimentation rate.
  - Considered basically 'non-toxic'
  - identified in various foods, such as brown rice and beef, released to the atmosphere in emissions from tobacco smoke, biomass combustion, coal/refuse combustion, veneer drying, and cooking hamburger meat.
  - In soil or water-it will biodegrade
- dipropylene glycol[190]

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[186] **POLYETHYLENE GLYCOL**
CASRN: 25322-68-3 HSDB

[187] **ALPHA-TERPINEOL**
CASRN: 98-55-5 HSDB

[188] **1-PROPOXY-2-PROPANOL**
CASRN: 1569-01-3 HSDB

[189] **OLEIC ACID**
112-80-1 hsdb

[190] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+25265-71-8

  - eye irritant
  - mild skin irritant
  - generally health effects reported
  - Rats received 12% /dipropylene glycol/ in the diet for 15 weeks. The treatment resulted in depression of running activity. Moderate degenerative changes in kidneys were found
  - High mobility
  - dipropylene glycol is not expected to adsorb to suspended solids and sediment
  - potential for bioconcentration in aquatic organisms is low
- N.N –dimethyl-N-Dodecylamine Oxide[191]
  - Information basically unknown

[191] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1643-20-5

Product choices based on ingredient information

Air fresheners

-emphasis should be on using non-air freshener solutions-

- fresh coffee grounds on the counter
- toss baking soda at the bottom of the trash can
- keeps the house clean and open the window[1]
- Sprinkle baking soda on carpets before vacuuming
- Unscented kitty litter, vinegar or charcoal placed in a bowl [2]
- Boiling cinnamon sticks, lemon leaves, orange leaves, lemon rinds, orange rinds, grapefruit rinds, mints, herbs, vanilla, or cloves in water
- Hang herbs to dry
- Dab essential oils or vanilla extract onto a cotton ball and then place them around your home such, in the bathroom in a small basket, in a vase of flowers, hung around the house in elegant sachet made from recycled fabric, etc.[3]

Bathroom cleaners

- Nature Clean Kitchen & Bath Cleaner(issue is potassium alkali)[4]
- AFM SafeChoice Safety Clean Concentrated All-purpose Bath and Bowl Cleaner(unknown if sold in Canada)[5]
- Nature clean Kitchen & Bath Spray Cleaner[6]
- Nature Clean Toilet Bowl Cleaner - 20L/ 5 gal.[7]
- Ecover Toilet Bowl Cleaner 750 ml[8]
- ecoethic cream cleanser[9]
- green works natural bathroom cleaner[10]

Bleach(most safe contain hydrogen peroxide which is a carcinogen in animals)

- Seventh Generation Chlorine Free Bleach[11]
- Nature clean Liquid Bleach - Non-Chlorine[12]
- Arm & Hammer Liquid Detergent with Color Safe Bleach Alternate[13]
- Vivid Liquid Laundry Bleach[14]
- Vivid Ultra Liquid Laundry Bleach[15]

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[1] http://www.time.com/time/health/article/0,8599,1664954,00.html
[2] http://www.environmentnetwork.org/Clean_Green.htm
[3] http://www.aboutmyplanet.com/daily-green-tips/environmentally-friendly-4/
[4] http://www.grassrootsstore.com/index.asp?PageAction=VIEWPROD&ProdID=231
[5] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=1028025
[6] http://www.shopnontoxic.com/naturecleanliving/detail.aspx?ID=64
[7] http://www.shopnontoxic.com/naturecleanliving/detail.aspx?ID=99
[8] http://www.ecover.com/ca/en/Products/Cleaning/Toilet+Bowl+Cleaner.htm
[9] see msds printout in waste reduction file cabinet
[10] http://www.thecloroxcompany.com/products/msds/greenworks/launchgreenworksbc1007.pdf
[11] http://www.seventhgen.com/our_products/laundry/chlorine_free_bleach.html
[12] http://www.shopnontoxic.com/naturecleanliving/detail.aspx?ID=82
[13] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=3005018
[14] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=4003022
[15] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=4003024

- Clorox All Fabric Bleach[16]
- Clorox Color Safe Bleach[17]

Dishwashing detergent

- Ivory Liquid Hand Dishwashing Detergent[18]
- Nature Clean Dishwasher Rinse Agent[19]
- Nature Clean Dishwashing Liquid - Mandarin & Grapefruit[20]
- Joy Liquid Hand Dishwashing Detergents[21]
- Nature Clean Dishwashing Liquid - Unscented[22]
- Ultra Dawn Liquid Hand Dishwashing Detergents[23]
- Dawn simple Pleasures Liquid Hand Dishwashing Detergent with Air Freshener[24]
- Nature Clean Dishwashing Liquid - Lavender & Tea Tree[25]
- Non Ultra Dawn Liquid Hand Dishwashing Detergents[26]
- Cascade Powder Automatic Dishwashing Detergent Powder[27]
- Ecoethic dish washing liquid[28]
- Seventh Generation, Free and Clear Automatic Dishwashing Powder[29]

Mothballs

- store cedar chips, newspapers or lavender flowers with clothing
- air tight containers

Laundry detergeants

- Swish Clean-it™ Ultra Laundry Powder Detergent[30]
- Down East Liquid Laundry[31]
- Simply Clean Laundry Detergent[32]

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[16] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=3007040
[17] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=3007041
[18] http://www.pg.com/content/pdf/01_about_pg/msds/fabric_and_homecare/dishwashing_products/Ivory.pdf
[19] http://www.shopnontoxic.com/naturecleanliving/detail.aspx?ID=86
[20] http://www.shopnontoxic.com/naturecleanliving/detail.aspx?ID=87
[21] http://www.pg.com/content/pdf/01_about_pg/msds/fabric_and_homecare/dishwashing_products/Joy.pdf
[22] http://www.shopnontoxic.com/naturecleanliving/detail.aspx?ID=66
[23] http://www.pg.com/content/pdf/01_about_pg/msds/fabric_and_homecare/dishwashing_products/Ultra_Dawn.pdf
[24] http://www.pg.com/content/pdf/01_about_pg/msds/fabric_and_homecare/dishwashing_products/Dawn_Simple_Pleasures.pdf
[25] http://www.shopnontoxic.com/naturecleanliving/detail.aspx?ID=169
[26] http://www.pg.com/content/pdf/01_about_pg/msds/fabric_and_homecare/dishwashing_products/Non-Ultra_Dawn.pdf
[27] http://www.pg.com/content/pdf/01_about_pg/msds/fabric_and_homecare/dishwashing_products/Cascade_Pure_Rinse_and_Complete_Powder.pdf
[28] see msds in waste reduction file cabinet
[29] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=19039009
[30] http://www.swishclean.com/Products/Media/pdf/8013-10MS.pdf
[31] http://www.bebbingtonindustries.com/msds/Down_East_Liquid_Laundry.doc

- Simply Clean HE Laundry Detergent[33]
- Green knight liquid laundry detergent[34]
- Arm & Hammer Concentrated Detergent[35]
- Tide Ultra Cold Water Granular Laundry Detergent[36]
- Eco Ethic Liquid Laundry[37]
- Simply Clean Dish Detergent[38]
- Ariel Laundry Detergent Powder[39]
- Cheer Granular Laundry Detergent[40]
- Gain Liquid Laundry Detergent[41]
- Gain Ultra[42]
- Ivory Snow Liquid Laundry Detergent[43]
- Tide High Effciency Detergent[44]
- Orange Clean Liquid Laundry Detergent[45]
- Simple Green All Purpose Cleaner-Lemon Scented[46]
- Simple Green Concentrated Cleaner, Degreaser, Deodorizer[47]

All purpose/multipurpose cleaners

- Orange Clean Multi Purpose Cleaner, Tough Acting Degreaser(possibly available only online)
- Focus brand mp 11 multi purpose cleaner[48]*(made in new york)
- Pine Sol Brand Cleaner[49]
- Swish Biogrease Control[50]
- Formula 409 All Purpose Cleaner Antibacterial kitchen lemon fresh[51]

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[32] http://simplyclean.ca/vervenaturals/simplyclean/assets/LaundryDetergent.pdf
[33] http://simplyclean.ca/vervenaturals/simplyclean/assets/HELaundryDetergent.pdf
[34] http://www.bebbingtonindustries.com/msds/GreenKnight_Liquid_Laundry.doc
[35] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=3005005
[36] http://www.pg.com/content/pdf/01_about_pg/msds/fabric_and_homecare/detergents/Tide_Ultra_Coldwater_Granular_Laundry_Detergent.pdf
[37] see msds in waste reduction file cabinet
[38] http://simplyclean.ca/vervenaturals/simplyclean/assets/DishDetergent.pdf
[39] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=16003095
[40] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=16003338
[41] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=16003105
[42] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=16003062
[43] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=16003606
[44] http://www.pg.com/content/pdf/01_about_pg/msds/fabric_and_homecare/detergents/Ultra%20Tide%20HE%20Granular%20Laundry%20Detergent.pdf
[45] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=15010013
[46] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=19006001
[47] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=19006002
[48] http://www.focus-acs.com/easySolutions.html
[49] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=3007088
[50] http://www.swishclean.com/product.htm?Product=6503-4&Source=Category&Category=GENERAL%20PURPOSE%20CLEANERS_ALL%20PUR
[51] http://www.thecloroxcompany.com/products/msds/409products/formula409antibacallpurposecleanerlemonfresh8-07.pdf

- Formula 409 All purpose Cleaner antibacterial cleaner[52]
- Enviro Solutions General Purpose Concentrate. 2x4.73[53]
- Enviro-Solutions Super Hydrogen Citrus Concentrate[54]
- Enviro Solutions #84 Neutral Floor Cleaner[55]
- Enviro General Purpose[56]

Next Steps for future student:
Analyze local stores for products to ascertain if anything is missing from list or if something should be removed because it is unavailable or unfeasible.
Analyze geographical differences and location of production of products to decide on environmental footprint and decide if anything must then be removed from the product list.
Decide how to implement and transfer knowledge to the Green Shopping Guide(GSG).

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[52] http://www.thecloroxcompany.com/products/msds/409products/formula409antibacallpurposecleaner807.pdf

[53] http://www.swishclean.com/Products/Media/pdf/ES70-CSMS.pdf

[54] http://www.swishclean.com/Products/Media/pdf/ES71MSDS.pdf

[55] http://www.swishclean.com/Products/Media/pdf/ES84-CSMS.pdf

[56] http://www.swishclean.com/Products/Media/pdf/ES70MS.pdf

Running Head: CONCLUSION OF CLINICAL

Conclusion of Clinical Research

Michael Reid

Contents

1 List of Ingredients Derived From Research 3

2 List of Products Derived From Ingredient List 47

Ingredients for each product:
-Liquid detergent
-stain removers
-air fresheners

-1- sodium silicate[1]
- irritation to skin and corneal damage noted, if swallowed can cause v/d
- chemical can asphyxiate mussels in ecosystem
- renal lesions noted in dogs after being fed food containing sodium silicate [2]
- considered toxic in freshwater cladoceran population[3]

-1- Sillica
- Carcinogenesis found in industrial studies (specifically lung cancer)[4]
- Environmental impact is considered minor when taking into account the amount of naturally occurring silica in both water and land[5]

-2- perfumes
- are they an issue, toxicology information is hard to find?

-3- isobutane[6]
- chemical found in air in high traffic areas, service stations, insect sprays, window and glass cleaners, personal spray deodearants, rug and upholstery cleaners
- in very high doses it causes respiratory /cardiac issues in animals
- human studies suggest it to be minimally harmful or even perhaps harmless
- biodegradable and has short half life. Does not accumulate in soil or in mammals.

-4- propane[7]

-1- [1] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:##erm+@rn+1344-09-8

[2] **Final report on the safety assessment of Potassium Silicate, Sodium Metasilicate, and Sodium Silcate**
Anonymous

[3] **Toxicity of laundry detergent components to a freshwater cladoceran and their contribution to detergent toxicity.**
Warne MS; Schifko AD
Ecotoxicol Environ Saf. 1999, Oct; 44(2):196-206. [Ecotoxicology and environmental safety] [PubMed]

[4] **Silica**
Anonymous
IARC Monographs on the evaluation of the carcinogenic risk of chemicals to humans

[5] **Synthetic Amorphous Silica**
Anonymous
ECETOC Joint Assessment of Commodity Chemicals Vol:51 (2006) 221 p

-3- [6] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+75-28-5

-4- [7] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+74-98-6

- can depress cns system at very high levels
- after exposure to person it can accumulate in breast milk
- volatile
- produces cns depression in various kinds of animals- specifically respiratory depression and distress
- can also cause skin burns
- can stay as atmosphere as part of smog for high amount of time since sunlight does not break it down
- not a significant problem for aquatic ecosystem unless in high amounts since it takes awhile to breakdown

-5- Ammonium Hydroxide[8]

- Hazardous substance when 1000lb or more is released into nature
- gas and liquid are both very corrosive. Eye injuries can be permanent and severely disabling. Dermal contact is also toxic
- several generations of trout exposed to ammonium hydroxide grew lesions and were more susceptible to infections
- considered 'weak mutagen'- alteration in some 'hormone sensitive'[9] organs have been noticed in animals exposed to ammonium hydroxide

-6- hydrocarbon propellant

- unknown-talk to toxicologist?

-7- ethanol

- alcohol- is this an issue as a spray(toxicologist?)
- environmental impact seems negligible(?)

-8- sorbitan oleate[10]

- considered non-toxic based on the high amount needed for a lethal dose
- rats on a diet including sorbitan oleate had some organ enlargement(specif. liver, kidney) and some tubular defects. This not completely conclusive as research suggested malformations were from the poor diet
- mild skin irritant[11]

-9- Butane[12]

- Dec. cns when airborne, can cause death with high enough

-5- [8] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1336-21-6

[9] **Ammonium hydroxide**
BIBRA working group
(1995) 6 p [RISKLINE]

-8- [10] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1338-43-8

[11] **Final report on the safety assessment of sorbitan stearate, sorbitan laurate, sorbitan sesquioleate, sorbitan oleate, sorbitan tristearate, sorbitan palmitate, and sorbitan trioleate**
Anonymous
J Am Coll Toxicol Vol:4, 3 (1985) pp 65-121 [RISKLINE

-9- [12] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+106-97-8

concentrations
- In low airborne concentrations it can cause drowsiness
- Has been noted to cause myoclonus and severe frost bite when used in cleaners
- Possible developmental effects in foetus, has been found in breast milk
- environmentally it is an airborne pollutant and has a long half life when introduced to land or water. It has a moderate chance to stay within aquatic mammals

-10-nonnylphenol polyethoxylate(another name: C9-11 Pareth-3)
- Form of aylkl ethy oxalates
- health concerns such as kidney, liver alteration, hormone disruption(both estrogen and testosterone) [13] in rats and environmental[14] -concerns specifically with chemical survival in water, does cause sexually abnormal development in fish
- banned in Europe, under study in Canada and allowed in the usa

-1- diethylene glycol ethyl ether[15]
- large scale ingestion of substance can cause respiratory and cns irritation and damage
- embryotoxic when tasted
- when applied as a cosmetic it can be dangerous when used on broken skin or when used on those with renal issues
- when fed to animals there is an enlargement of kidneys, dec. in hemoglobin, degenration of renal tubules
- when given to pregnant mice, mother loses weight or dies but foetus shows no signs of being altered.
- Irritation, health effects vary between animals
- In great enough levels is lethally toxic to fish
- 'highly mobile' in wet soil. Does bio-degrade well in dry soil
- does not break apart but research suggests that it accumulates in small amounts in aquatic organisms

-1- (hydrotreated?)petroleum, hydrotreated light

-2- citrus oils(toxicologist?)

-3- acetone[16]
- naturally occurs as a ketone body
- reproductive and developmental effects noticed in rats
- could enhance the hepatotoxic effects of other substances
- vapor effects range from a minor eye irritation to vomiting and fainting]

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[13] http://envirostats.files.wordpress.com/2007/08/endocrine-disruptors.pdf

[14] http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl2-lsp2/nonylphenol/nonylphenol_2_e.html

-1- [15] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+111-90-0

-2- [16] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+67-64-1

- acute xposure can also cause menstrual irregularities
- unknown carcinogenicity due to lack of data
- can cause dermatitis
- inhalation or ingestion can cause organ damage incl. Lung,kidney, liver injury and cns depression
- lethal to ecosystem animals if in large enough quantities
- injuries to animals vary, generally if dose is large enough irritation to eyes, or organ enlargment is noticed
- in rats and mice there was minimal changes in reproductive organs, development of young
- acetone is naturally emitted by volcanic eruptions, cigarette smoke, wood burning fire places.
- Acetone does biodegrade in aerobic, anaroebic conditions. Chemical does have a long half life in water.
- Bioconcentration is reported to be low in aquatice organims
- High mobility noticed in soil, has been noticed in ground water, wells in areas near disposal of
- Has been recorded in rainfall over major cities
- found in human breast milk

-4- Nitrogen[17]

- Inhalation of vapor can cause severe burns in oropharyngeal region
- Inhalation of gas causes decreased cns response
- Dangerous to contact when in liquid form
- Injection of nitrogen gas into the eye ball of rabbits caused no harmful effects
- Increase of nitrogen in room air can eventually cause hypoxia in mice
- Found in many mineral deposits, makes up percentage of atmosphere

-5- Terpenes and Terpenoids, type citrus oil

- Unknown, some sort of citric oil?-toxicologist?

-6- tryethylene glycol[18]

- reportedly not harmful to skin, eyes, resp system,/ not a health hazard to humans whatsoever
- basically harmless in animals except in very large doses that can delay developmental growth and cause kidney enlargment
- biodegradation is the only form of destruction of this chemical
- it is highly mobile in soil and has a long half-life in water
- its effects on aquatic organisms though are considered minimal

-7- isopentane[19]

-3- [17] **NITROGEN**
7727-37-9 HSDB
-4- [18] **TRIETHYLENE GLYCOL**
112-27-6 HSDB
-5- [19] **ISOPENTANE**
78-78-4 HSDB

- irritant to resp tract, gi tract and skin
- retained in lungs, found in personal air
- cns depressant when inhaled
- cardiac sensitizer-in experiment it killed all through arrhythmias
- at high enough levels is eco-toxic, animal-toxic
- naturally occurring compound emitted by several types of trees/motor vehicle exhaust
- has relatively long half life in air and water(especially long in lakes where half life is 3 days)
- in water it can end up in soil/sediment
- bio concentration in aquatic organisms classified as 'moderate'

-8- Pentane[20]

- Cns depressant, lethal in high enough doses
- On skin causes irritation, burning, itching leading to blisters
- Pneumotitis, pulmonary edema have been known to occur with aspiration
- Found in breast milk in several us cities
- Has been noted to cause nerve blockage in animals, developmental abnormalities. Most rats died from respiratory collapse(can occur at lower concentrations)
- No changes in rat foetus when pentane administered, not found to be mutagenic
- Neutropenia and hepatomegaly found after sub cutaneous injections in rats
- General solvent and component of natural gas and crude oil
- High mobility in soil
- Becomes vapor in atmosphere
- Half life is long in water(3 days in lake)
- Bioconcentration for aquatic organisms would be 'moderate'

-9- diethylene glycol monobutayl ether[21]

- reddening when dermal contact was made, not irritating
- various symptoms observed: cns depression, renal failure, muscular skeletal pain, organ lesions,
- not corrosive to resp tract
- lethal dose in humans: 1 ml/kg
- effects in animals are hemolytic: ie. Splenomegaly, anemia, hemoglobinuria, kidney damage
- no effects on sexual organs though there was a noted decrease in maternal body weight gain in rats

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-6- [20] **PENTANE**
109-66-0 HSDB
-7- [21] **DIETHYLENE GLYCOL**
111-46-6 HSDB

- very high soil mobility, becomes gas in atmosphere with a halflife of 7.2 hours
- not likely to absorb into soil, surfaces in water

-10-Stearic acid[22]

- Ingestion can cause intestinal obstruction, aspiration can cause chemical pneumonia
- Implantation of the acid causes foreign body reaction
- Vapors can irritate upper respiratory tract
- Found to be not very irritating to skin
- Considered to basically be non-toxic though can be lethal of ingested in large enough quantities
- Lethal dose causes pulmonary emboli in mice, thrombogenic in other animals (diminishes time for clotting)…predilection for pulmonary infections also noted
- Erratic weight gain also noted in rats when stearic acid added to diet
- Vapor and particulate phase in atmosphere has a halflife of 17 hours
- Completely immobile in soil though long half life in it(several days)
- In aquatic environment the chemical has a high probability to migrate into soil or sedimentation
- Very high bioconcentration in aquatic organisms
- Found in cosmetics, suppositories, soaps, lubricants, ointments, food packaging

-11-paraffin waxes, wax in general?
-12-Perfumed/fragrance scents?
-13-Natural gum?
-14-White Mineral oil
-15-Isoparaffinic hydrocarbon(s)[23]

- Considered to be practically non toxic if inhaled, touched or swallowed, aspiration though can be quite damaging to lung tissues and cause pneumonia
- environmental issues?
- Used also as weapons cleaner

-16-Alkyl (C12-C18) dimethyl benzyl ammonium chloride

- Ethane? Toxicologist info?

-17-Alkyl(C12-C14)dimethyl ethyl benzyl ammonium chlorides

- Ethane? Toxicologist?

-18-sodium aluminosillicate

-8- [22] **STEARIC ACID**
57-11-4 HSDB

-9- [23] **Toxicology update isoparaffinic hydrocarbons: a summary of physical properties, toxicity studies and human exposure data.**
Mullin LS; Ader AW; Daughtrey WC; Frost DZ; Greenwood MR
J Appl Toxicol. 1990, Apr; 10(2):135-42. [Journal of applied toxicology : JAT] [PubMed]

- irritant to skin, eyes, mucous membranes
- even at high levels toxicity not found in mammals, aquatic organisms
- study on use as detergent showed no significant environmental impact
- limited information found in database on this chemical

-19-octophenoxypoly (ethoxyethanol)

- ?? limited info, toxicologist?

-20-dipropylene glycol monomethyl ether[24]

- no irritation found in skin patch tests
- irritating to respiratory passages though no organic injuries noted
- 0.5-0.6 ML/KG. Is the dose necessary via iv to kill a dog, death by respiratory arrest via cns depression, gastric corrosion noted
- low toxicity in general with animals
- when applied to eyes in rabbits it causes mild transitory reaction/irritation
- constituent of a variety of industrial and consumer products including hydraulic brake fluid, solvents, paints, dyes, household cleaners, cosmetics, and pesticide formulations.
- Highly mobile and will leach into ground water, otherwise environmental impact is minimal

-21-Sodium xylenesulfonate[25]

- Low toxicity level
- Information limited

-bathroom cleaner

-22-tetrasodium edta[26]

- when added to eye causes change in acid base balance and permanent damage
- intra venous application can cause severe hypocalcemia leading to tetany and death
- found to be genotoxic and fetotoxic in mice
- possible carcinogen
- limited info on environmental effects(toxicologist)

- dipropylene glycol monomethyl ether[27]

- no irritation found in skin patch tests
- irritating to respiratory passages though no organic injuries noted
- 0.5-0.6 ML/KG. Is the dose necessary via iv to kill a dog, death by

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-10-[24] **DIPROPYLENE GLYCOL MONOMETHYL ETHER**
Synonym: **dipropylene glycol methyl ether**
34590-94-8 HSDB

-11-[25] **SODIUM XYLENESULFONATE**
CASRN: 1300-72-7 HSDB

-12-[26] http://toxnet.nlm.nih.gov/cgi-bin/sis/s##rch/r?dbs+hsdb:@term+@rn+64-02-8

[27] **DIPROPYLENE GLYCOL MONOMETHYL ETHER**
Synonym: **dipropylene glycol methyl ether**
34590-94-8 HSDB

respiratory arrest via cns depression, gastric corrosion noted
- low toxicity in general with animals
- when applied to eyes in rabbits it causes mild transitory reaction/irritation
- constituent of a variety of industrial and consumer products including hydraulic brake fluid, solvents, paints, dyes, household cleaners, cosmetics, and pesticide formulations.
- Highly mobile and will leach into ground water, otherwise environmental impact is minimal

- hydrogen peroxide[28]
  - unknown carcinogenicity in humans though proven carcinogenic in animals
  - if ingested, possibly severe gi damage can be done can be very painful if gotten in eyes

-23-2-Butoxyethanol[29]
  - widely used solvent found in paints and varnishes
  - readily absorbed via inhalation, dermal contact and oral exposure
  - possible carcinogen(further studies needed to actually create proof)
  - reportedly irritating to eyes and skin
  - reportedly hemolytic effects in animals though humans seem resistant to hemolysis
  - causes reproduction and developmental alterations in animals
  - when in atmosphere becomes vapor, half life is 16hours
  - high mobility in soil
  - biodegrades rapidly in water
  - low risk of being absorbed by aquatic organisms

-24-D-Glucopyranose, oligomeric, decyl octyl glycosides
  - Reports of skin and eye irritation
  - Toxicologist?

-25-hydroxyacetic acid[30]
  - byproduct of production, found in sugar cane, textile dyeing, well cleaning, dairy farm cleaning, soldering chemicals together, breaking petroleum emulsions, used to regulate ph medically,
  - mild irritant to skin, mucous membranes, ingestion is moderately toxic. High dose solution causes severe burns
  - is a cause of metabolic acidosis
  - in animals causes kidney and liver toxicity/injuries and metabolic acidosis

-26-D-Glucopyranose, oligomeric, C9-11-alkyl glycosides
  - Unknown(toxicologist)

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[28] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7722-84-1

-23-[29] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+111-76-2

-24-[30] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+79-14-1

-27-Alkyl(C12-18)dimethylbenzyldimethylethylbenzyl ammonium chlorides
- Unknown (toxicologist

-28-citric acid[31]
- used in food, drink preparations and also pharmaceutical creations and cleaners
- mildly irritating to gi tract after consuming, created nausea, diarrhea and indigestion
- inhalation causes coughing
- large enough intravenous doses cause hypocalcaemia and eventually cardiac arrest
- very irritating and damaging to eyes due to acidic content of substance
- can cause erosion of dental enamel
- high enough doses are cytotoxic, in animals when applied to the tongue in high doses it is ulcerative and causes lesions
- administration to rats can cause ataxia followed by other motor issues and then leads to respiratory and cardiac failure
- not carcinogenic or reprotoxic or developmentally toxic
- biggest is irritation to upper respiratory tract, eyes, skin
- highly mobile in soil
- low acute toxicity to marine organisms
- is not considered to be hazard to environment, quick biodegradable-ness

- Sodium hydroxide[32]
  - Studies widely show chemical is irritating and corrosive to surfaces it touches
  - Ingestion can be fatal\concern for children
  - Cannot reach female/male reproductive organs or foetus
    Damage to environment[water] depends or buffer level of ecosystem, ph level can be altered and toxicity in organisms is possible

- Sodium Hypochlorite[33]
  - Not cancer causing in animals, not studied in humans for carcinogencity
  - Ingestion causes pain and inflammation in areas of contact along with erosion of mucous membranes. Aspiration can cause respiratory failure
  - Addition to circulatory system will cause coma or cardiac arrest and/or death

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-25-[31] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?##s+hsdb:@term+@rn+77-92-9

[32] **Sodium hydroxide**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (2004) 112

[33] http://toxnet.nlm.nih.gov##gi-bin/sis/search/r?dbs+hsdb:@term+@rn+7681-52-9

- Skin contact causes irritation in the form of vesicular eruptions, eczematoid dermatitis, onycholysis, hair may reversibly fall off Very hazardous to environment, may chlorinate water[34]

-29-Aluminum Distearate[35]

- Irritation reported in lung and eyes
- Used as a stabilizer in preserving food, used in cosmetics, water repellant soap, organic solvents
- Environmental unknown

-30-calcium carbonate

- inhalation/nasal exposure leads to minimal irritational symptoms
- if absorption is high enough systemic and renal effects could occur.
- Used in antacids and use in antacids has been associated with hypercalcemia and medical issues relating to hypercalcemia, including emergency pregnancies
- Association with cancer in industrial setting
- Adding dust to rabbits eyes or injecting rabbit with amount of alcium carbonate causes very little effect
- carcinogenic in animals
- causes low ph in aquatic species
- toxic at high enough levels
- pesticide, food additive, industrial finishes, coatings, Manufacturer of paint, rubber, plastics, paper, dentifrices, ceramics, putty, polishes, insecticides, inks, shoe dressings; as filler in production of adhesives, matches, pencils; crayons, linoleum, insulating compds, welding rods. cosmetics, pharmaceuticals, antibiotics; removing acidity of wines. in analytical chemistry for detecting and determining halogens in organic combinations; with ammonium chloride for decomposing silicates; preparing calcium chloride soln for standardizing soap soln; for water analyses.

-31-aylkyl phenol ethyoxalates

- Form of aylkl ethy oxalates
- health concerns such as kidney, liver alteration, hormone disruption(both estrogen and testosterone) [36] in rats and environmental[37] -concerns specifically with chemical survival in water, does cause sexually abnormal development in fish

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[34] **Natriumhypochlorit**
Anonymous
Toxikologische Bewertung. Heidelberg, Berufsgenossenschaft der chemischen Industrie Vol:175 (1991) 49 p [German] [RISKLINE]

-29-[35] **ALUMINUM DISTEARATE**
300-92-5 HSDB

[36] http://envirostats.files.wordpress.com/2007/08/endocrine-disruptors.pdf

[37] http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl2-lsp2/nonylphenol/nonylphenol_2_e.html

- banned in Europe, under study in Canada and allowed in the usa

-32-tetradecylbenzyldimethylammonium chloride

- skin and eye irritant
- used as surfactant, detergent and a germicide,
- not mobile in soil
- particle phase in atmosphere
- does not concentrate in aquatic organisms
- does not concentrate in soil or sediment

-33-Dodecyl dimethyl ethylbenzyl ammonium chloride

- No information found?, hazardous?

-34-phosphoric acid

- after ingestion or inhalation corrosion of membranes was reported and necrosis in effected areas. Also can cause gastric hemorrhage, death is usually caused by circulatory shock and circulatory collapse
- irritating as spray or mist
- topically seriously damaging to eyes
- 15 to 20% phosphoric acid destroys plants
- toxic to fish depending on quality of acid
- substance has mobility in soil and will infiltrate downwards
- serious impact on ground water

-35-sodium lauryl sulfate[38]

- can cause allergic dermatological reactions
- can cause drying effect to skin, irritational to eye
- poison by intravenous, intraperitoneal, moderately toxic by ingestion
- when fatal poisoning was caused in animals, though symptoms seen were only diarrhea and intestinal bloating
- not irritating in ingestion if in low enough doses
- in ambient atmosphere the chemical exists in a particulate phase
- no mobility
- potential for bioconcentration in organisms is moderate
- Used in shampoos, hairdyes, toothpastes, hand dishwashing detergents; used in many cleaning compounds because of cleaning ability, mildness and foaming capability., Food additive (emulsifier and thickener)

-36-sodium carbonate[39]

- irritation occurs in large quantities
- damage to mucous membranes can occur with a concentrated amount
- irritating to eyes not considered hazardous to environment though chemical can alter of the ph of an aquatic eco-system[40]

-35-[38] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+151-21-3

-36-[39] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+497-19-8

[40] anonymous, (2003) sodium carbonate, Screening Information Data Set for High Production Volume Chemicals. Found in toxnet.nlm.nih.gov

-37-sulfamic acid[41]
- corrosion and necrosis with ingestion or dermal contact
- cause of death is usually shock
- strong acid, moderately toxic
- dust form is an irritant
- animal testing shows no serious injury
- limited information on environmental impact
- used primarily in cleaning products, food packaging

-disinfectant
-drain cleaner
-glass cleaner
-oven cleaners
-scouring cleansers
-toilet bowl cleaners
-bleach

-1- benzenesulfonic acid [42](c10-c16 alkyl derivatives)
- limited impact in humans and environment though could impact daphnids/water fleas (cladoceran)(issue for county?)

-38-Sodium perborate tetrahydrate[43]
- Not toxic to development when studied on rats
- In large quantities can be acutely toxic to aquatic organisms[44]

-39-Subtilisin[45]
- Biodegrable, high water solubility thereby having minimal environmental impact
- Can cause mild dermatological rash, besides this impact is minimal to human health

-40-2-aminoethanol
- minor skin irritant, higher doses are needed to cause irritation
- non mutagenic, if mutagenic effects are seen they are moinor

-41-Triethanolamine[46]

-37-[41] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+5329-14-6

-38-[42] Anonymous, benzene, c10-c16 alkyl derivatives, screening information data set for high production volume chemicals

-39-[43] **Rat embryo-fetal development study on sodium perborate tetrahydrate.**
Bussi R; Chierico G; Drouot N; Garny V; Hubbart S; Malinverno G; Mayr W
Teratology 1996 May;53(5):26A [DART]

[44] **Toxicity of laundry detergent components to a freshwater cladoceran and their contribution to detergent toxicity.**
Warne MS; Schifko AD
Ecotoxicol Environ Saf. 1999, Oct; 44(2):196-206. [Ecotoxicology and environmental safety] [PubMed]

-39-[45] **Savinase'- Proteolytic enzymes in detergents**
Anonymous
NICNAS: Priority existing chemical assessment report Vol:2 (1993) pp 79 [RISKLINE]

- can cause dermatological problems: rashes, eczema, vesicular lesions,
- ingestion can cause alkali burns in oropharynx/esophagus
- not very harmful-minimum fatal dose would be about one pint for 70kg person
- minimal environmental impact though a large scale induction of triethanolamine into the water system can alter ph[47]

-42-hydrogen peroxide[48]

- unknown carcinogenicity in humans though proven carcinogenic in animals
- if ingested, possibly severe gi damage can be done
- can be very painful if gotten in eyes

-43-sodium carbonate[49]

- irritation occurs in large quantities
- damage to mucous membranes can occur with a concentrated amount
- irritating to eyes
- not considered hazardous to environment though chemical can alter of the ph of an aquatic eco-system[50]

-44-isopropylamine dodecylbenzene

- flammable
- irritating to eyes and skin
- if swallowed lung damage could occur
- harmful to aquatic systems, may cause long term effects
- check with toxicologist on this chemical due to limited info[51]

-45-Sodium Hypochlorite[52]

- Not cancer causing in animals, not studied in humans for carcinogencity
- Ingestion causes pain and inflammation in areas of contact along with erosion of mucous membranes. Aspiration can cause respiratory failure
- Addition to circulatory system will cause coma or cardiac arrest and/or death
- Skin contact causes irritation in the form of vesicular eruptions, eczematoid dermatitis, onycholysis, hair may reversibly fall off

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-40-[46] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+102-71-6

[47] **Triethanolamine**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (1997) 2 p [RISKLINE]

-42-[48] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7722-84-1

-43-[49] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+497-19-8

[50] anonymous, (2003) sodium carbonate, Screening Information Data Set for High Production Volume Chemicals. Found in toxnet.nlm.nih.gov

[51] http://www.wurth.com.au/msds/1893_565_1.HTM

-45-[52] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7681-52-9

- Very hazardous to environement, may chlorinate water[53]

-46-Fungal lipase(?-talk to toxicologist)
-47-Alcohols, C12-14-secondary, ethoxylated(talk to toxicologist)
-48-Sodium hydroxide[54]

- Studies widely show chemical is irritating and corrosive to surfaces it touches
- Ingestion can be fatal\concern for children
- Cannot reach female/male reproductive organs or foetus
- Damage to environment[water] depends or buffer level of ecosystem, ph level can be altered and toxicity in organisms is possible

-49-C12-15 Pareth-11

- Form of aylkl ethy oxalates
- health concerns such as kidney, liver alteration, hormone disruption(both estrogen and testosterone) [55] in rats and environmental[56] -concerns specifically with chemical survival in water, does cause sexually abnormal development in fish
- banned in Europe, under study in Canada and allowed in the usa

-fabric sofetener
-stain remover
-dishwashing detergeants

-50- sodium carbonate[57]

- irritation occurs in large quantities
- damage to mucous membranes can occur with a concentrated amount
- irritating to eyes not considered hazardous to environment though chemical can alter of the ph of an aquatic eco-system[58]

-51-Subtilisin[59]

- Biodegrable, high water solubility thereby having minimal

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[53] **Natriumhypochlorit**
Anonymous
Toxikologische Bewertung. Heidelberg, Berufsgenossenschaft der chemischen Industrie Vol:175 (1991) 49 p [German] [RISKLINE]

-48-[54] **Sodium hydroxide**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (2004) 112

[55] http://envirostats.files.wordpress.com/2007/08/endocrine-disruptors.pdf
[56] http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl2-lsp2/nonylphenol/nonylphenol_2_e.html

-50-[57] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+497-19-8
[58] anonymous, (2003) sodium carbonate, Screening Information Data Set for High Production Volume Chemicals. Found in toxnet.nlm.nih.gov

-51-[59] **Savinase'- Proteolytic enzymes in detergents**
Anonymous
NICNAS: Priority existing chemical assessment report Vol:2 (1993) pp 79 [RISKLINE]

environmental impact
- Can cause mild dermatological rash, besides this impact is minimal to human health

-52-Sodium perborate tetrahydrate[60]
- Not toxic to development when studied on rats
- In large quantities can be acutely toxic to aquatic organisms[61]

-11-sodium silicate[62]
- irritation to skin and corneal damage noted, if swallowed can cause v/d
- chemical can asphyxiate mussels in ecosystem
- renal lesions noted in dogs after being fed food containing sodium silicate [63]considered toxic in freshwater cladoceran population[64]

-12-amylase
- natural enzyme?
- Harmful?

-13-disodium salt
- unknown, further research, toxicologist?

-14-sodium dychloroisocyanurate[65]
- considered moderately toxic
- irritant to skin, eyes, resp tract
- corrosive on stomach lining, gi hemmorhage?
- Lethal doses in rats produce organ congestion, gi tract irritation, liver dysfunction(found also in rabbits)
- Moderately severe eye irritant
- Active ingredient in dry bleaches, dishwashing compounds, scouring powders, detergent-sanitizers, swimming pool disinfectants, water and sewage treatment, replacement for calcium hypochlorite

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-52-[60] **Rat embryo-fetal development study on sodium perborate tetrahydrate.**
Bussi R; Chierico G; Drouot N; Garny V; Hubbart S; Malinverno G; Mayr W
Teratology 1996 May;53(5):26A [DART]

[61] **Toxicity of laundry detergent components to a freshwater cladoceran and their contribution to detergent toxicity.**
Warne MS; Schifko AD
Ecotoxicol Environ Saf. 1999, Oct; 44(2):196-206. [Ecotoxicology and environmental safety] [PubMed]

-11-[62] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1344-09-8

[63] **Final report on the safety assessment of Potassium Silicate, Sodium Metasilicate, and Sodium Silcate**
Anonymous

[64] **Toxicity of laundry detergent components to a freshwater cladoceran and their contribution to detergent toxicity.**
Warne MS; Schifko AD
Ecotoxicol Environ Saf. 1999, Oct; 44(2):196-206. [Ecotoxicology and environmental safety] [PubMed]

-14-[65] http://toxnet.nlm.nih.gov/cgi-bin#is/search/r?dbs+hsdb:@term+@rn+2893-78-9

- Environmental information unknown.

-15-sodium phosphate

- unknown perhaps limited toxicity (toxicologist
- used as tablets for colon cleanser for colonoscopy

-16-sodium sulfate

- toxic in large enough quantities to marine eco system, can be buffered with calcium[66]
- behavioral effects on Ceriodaphnia dubia[67]
- health effects unknown, perhaps minimal

-17-boric acid[68]

- exposure causes respiratory irritation, dryness, productive cough and eye irritation, reported to cause developmental effects in males were seen-i.e decreased sperm mobility, decreased sperm count
- ingestion by new born infants caused serious cns damage resulting in hemorrhaging and edema to the brain and spinal cord can lead to seizures, coma, death
- chronic exposure in adults can cause balding, and hyperthermia or hypothermia
- a single acute ingestion has been known to cause no symptoms in most people(79-88%). Those with symptoms had nausea/vomiting
- an acute ingested overdose caused lethargy and confusion
- erythoderma (skin throughout body becomes red and scaling)
- other symptoms include greenish-blue vomit and diarrhea, renal problems
- crosses placenta, overdose in pregnant mother has been known to cause death in foetus
- inhalation in animals has been known to cause ocular discharge, hypoactivity
- when applied to rabbit eyes irritation and blistering of the conjunctiva was noted, blistering more or less disappeared within 7 days
- dogs fed high doses of boron have been shown to have testicular atrophy and tubular malformations, decrease in liver and ovary rates were reported. Kidney and adrenal weights increased

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[66] **Importance of calcium in modifying the acute toxicity of sodium sulphate to Hyalella azteca and Daphnia magna.**
Davies TD; Hall KJ
Environ Toxicol Chem. 2007, Jun; 26(6):1243-7. [Environmental toxicology and chemistry / SETAC] [PubMed]

[67] **Bioenergetic effects of sodium sulfate on the freshwater crustacean, Ceriodaphnia dubia.**
Soucek DJ
Ecotoxicology. 2007, Apr; 16(3):317-25. [Ecotoxicology (London, England)] [PubMed]

-17-[68] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+10043-35-3

- developmental damage seen in rabbit fetuses, inc. mortality and organ alterations noted such as cardiovascular defects
- does not biodegrade
- For weatherproofing wood and fireproofing fabrics; as a preservative; manufacture of cements, crockery, porcelain, enamels, glass, borates, leather, carpets, hats, soaps, artificial gems; in nickeling baths; cosmetics; printing and dyeing, painting; photography; for impregnating wicks; electric condensers; hardening steel. Also used as insecticide for cockroaches and black carpet beetles.

-18-potassium hydroxide[69]

- very strong alkali
- very damaging to eye
- very corrosive to gi tract, acture poisoning cause severe gi pain and vomiting and diarrhea. Vomiting contains blood and mucosal lining'
- can lead to death within 24 hours though recovery has occurred it is not complete and issues remain in patient
- can be absorbed dermally
- strongly irritating to resp tract when inhaled
- application to the skin of mice caused tumors
- considered hazardous substance, nationally notifiable when more than 100lb released
- Principle uses of KOH include chemicals, particularly the production of potassium carbonate and potassium permaganate; pesticides, fertilizers, and other agricultural products; soaps and detergents; scrubbing and cleaning operations, e.g., industrial gases; dyes and colorants; and rubber chemicals.

-19-nitric acid[70]

- an acute case of inhalation in 56yr old white male causes progressive respiratory distress and then respiratory failure and death
- very debilitating when substance is added to eyes, can cause blindness
- ingestion of material causes corrosion and gastric hemorrhage
- skin contact causes immediate burns
- single exposure of nitric acid showed no damage to rats
- inc. levels in water will stimulate plankton and aquatic reed growth
- will damage soil and has high movement in ground so contamination of ground water is probable

-20-Trisodium citrate dihydrate

- Used in medical solutions/ treatment[71], i.e. could be used to flush iv

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-18-[69] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1310-58-3

-19-[70] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7697-37-2m

[71] **Oral rehydration solution containing trisodium citrate for treating severe diarrhea: controlled clinical trial**
Mazumder RN ; Nath SK ; Ashraf H ; Patra FC ; Alam AN
Br. Med. J.; VOL 302 ISS Jan 12 1991, P88-89, (REF 5) [IPA]

lines[72]
- Toxicologist?

-21-Pentapotassium triphosphate
- Toxicologist?

-22-Sodium dodecylbenzenesulfonate
- Skin irritant, emetic when swallowed
- Irritant to resp organs
- Low level feedings in rats have not produced systemic effects
- Mechanism of death is unknown at high doses
- Transient eye irritant in rabbits
- High mobility in soil
- Not expected to have an significant impact on aquatic systems or bio concentration in aquatic organisms

-23-ethanol[73]
- vapor is irritant to eyes, liquid is also irritating to eyes but no permanent damage
- ingestion can cause decreased involvement in frontal and posterior parts of the brain
- cns depressant
- cutaneous contact causes erythema
- Developmental effects on foetus through mother(unknown if this occurs through household products)
- Contact toxicologist also on the amount of applicability of research to household products-research primarily deals with alcohol ingestion therefore is of unknown use
- Unlikely to be persistent in environment
- naturally emitted from plants
- volatilization from moist soil surfaces is important in biodegradation

-24-Pentasodium triphosphate
- Toxicologist?

-25-sodium bicarbonate[74]
- ingesation can cause partial damage, rupture to the stomach, in those with renal insufficiency-systemic alkalosis can occur
- used as oral medication in humans, animals
- mildly irritating to eyes
- minor skin irritant

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[72] **Efficacy of 1.4% sodium citrate in maintaining arterial catheter patency: comparison to heparin**
Clifton GD ; Branson P ; McCoy RA ; Wilkerson MA
ASHP Midyear Clinical Meeting; VOL 25 ISS Dec 1990, PP-422R, (REF) [IPA]

-23-[73] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+64-17-5

-24-[74] **SODIUM BICARBONATE**
144-55-8 HSDB

- environmental problem? limited information found

-26-Isopropylamine dodecylbenzenesulfonate

- Toxicologist?

-27-2-amino-1-propanol

- toxicologist?, information limited

-28-pentasodium trypolyphosphate[75]

- ingestion in high doses can cause hypocalcemia, nausea, vomiting , death, esophageal stricture, hypotension, shock
- estimated fatal dose is 50g
- limited, toxicologist?
- Induces vomiting in dogs

-29-Triclosan[76]

- Can cause allergic dermatitis
- Found in human milk
- Absorbed cutaneously into the blood
- If in water the substance will absorb into sediment and soil
- Immobile in soil

-30-benzoyl peroxide[77]

- unknown if carcinogen
- dermal contact can produce stinging and burning
- exposure associated with hepato cytotoxicity
- upper resp irritation noted in workers
- used commonly as acne formulation
- 250 MG/KG fatal dose in adult mice
- suggested to be carcinogenic dermally in mice and rats
- low mobility in soil
- in water will absorb into sediment
- bioconcentration in organisms will be high

-31-carbomer[78]

- used in artificial tear formulations
- limited information available
- toxicologist opinion?

-32-N,N-di(2-hydroxyethyl)lauramide[79]

- Recorded to destroy sea urchin fertility
- In sheep noted to cause erthyocyte hemolysis
- Rats fed for 90 days with chemical showed no outward appearance though internal organs (liver, kidney) were enlarged. Erythrocyte level

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-25-[75] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7758-29-4
-26-[76] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+3380-34-5
-27-[77] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:#erm+@rn+94-36-0
-28-[78] http://www.medscape.com/medline/abstract/17415686
-29-[79] **N,N-DI(2-HYDROXYETHYL)LAURAMIDE**
Synonym: **n n di 2 hydroxyethyl lauramide HSDB**

also lower
- Very large doses (100 or 200 mg/kg) in rats have cause hepatic cancer
- Mobility in soil is medium to high
- Aquatic bio concentration absorption to sediment are not issues with chemical

-33-DMDM hydantoin[80]
- Contains formaldehyde
- Causes dermatitis
- Also reportedly corrosive and irreversibly damaging to eyes
- A liquid droplet aerosol was used on rats for four hours, during observation for next 14 days and dissection afterwards no damage was seen
- No damage was found when solution was given to rats via gastric intubation
- When dermally applied top rabbits, irritation was severe and animal was left lesions, necrosis
- Genetically toxic when applied to hamster ovary cells
- use as a cosmetic preservative and as a bactericide and fungicide in liquid detergents, fabric softeners, household cleaning products, soft soaps, paints, air fresheners, sealants and calks and paper coatings
- high ground mobility
- exists in particulate form in air
- removed from atmosphere by wet or dry deposition
- possibility of concentration in aquatic organisms is low

-34-Sodium chloride[81]
- Salt
- Low toxicity-main effects are usually increased blood pressure
- Causes eye irritation and increased corneal permeability
- Can causes electrolyte imbalance causing cell depolarization leading to organ necrosis, hemorrhage and eventual cardiovascular collapses and death
- The estimated fatal dose is approximately 0.75 to 3.00 g/kg.
- Information limited- Environmental effects seem to be minimal on less on a large scale in non salt water bodies

-35-Cocoamidopropyl betaine
- Surfactant, also found in shampoos, toothpaste[82]

-30-[80] **1,3-DIMETHYLOL-5,5-DIMETHYLHYDANTOIN**
Synonym: **dmdm hydantoin HSDB**
-31-[81] **SODIUM CHLORIDE**
7647-14-5 HSDB

[82] **Oral mucosal de#uamation caused by two toothpaste detergents in an experimental model.**
Herlofson BB; Barkvoll P
Eur J Oral Sci. 1996, Feb; 104(1):21-6. [European journal of oral

- Form of betaine? (toxicologist?)

-36-Zinc chloride[83]

- Unknown whether carcinogenic in humans
- Caustic, corrosive material
- Can cause delayed death with inhalation via destruction to lungs, esophagus, stomach, those that survive have permanent damage
- Skin contact can cause ulceration
- Lens opacities, iritis, and glaucoma may occur after splashing of concentrated (50%) solution.
- 'Inadequate information' on whether chemical is carcinogenic though animal studies show creation of carcinomas
- Genotoxic in mice, rats and was more pronounced in animals who were calcium deficient
- No information on environmental effects, damage

-37-Sodium cumenesulphonate

- No information available, toxicologist?

-38-Alcohols, C12-18, ethoxylated propoxylated

- No information available, toxicologist?

-39-Acrylic acid polymer/copolymer[84]

- Low toxicity in animals
- Minor eye irritant
- Poorly degraded in environment

-40-(C13-C16)Alkyl ethoxylate sulfuric acid, ammonium saltethers, ammonium salts

- Form of aylkl ethy oxalates
- health concerns such as kidney, liver alteration, hormone disruption(both estrogen and testosterone) [85] in rats and environmental[86] -concerns specifically with chemical survival in water, does cause sexually abnormal development in fish
- banned in Europe, under study in Canada and allowed in the usa

-53-Sodium hydroxide[87]

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sciences] [PubMed] TOXNET

-36-[83] **ZINC CHLORIDE**

7646-85-7 HSDB

-37-[84] **Polycarboxylate polymers as used in detergents**

ECETOC working group

ECETOC Joint Assessment of Commodity Chemicals Vol:23 (1993) 49 p

[85] http://envirostats.files.wordpress.com/2007/08/endocrine-disruptors.pdf

[86] http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl2-lsp2/nonylphenol/nonylphenol_2_e.html

-53-[87] **Sodium hydroxide**

Anonymous

SIDS. Screening Information Data Set for High Production Volume Chemicals. (2004) 112

- Studies widely show chemical is irritating and corrosive to surfaces it touches
- Ingestion can be fatal\concern for children
- Cannot reach female/male reproductive organs or foetus Damage to environment[water] depends or buffer level of ecosystem, ph level can be altered and toxicity in organisms is possible

-54-Sodium Hypochlorite[88]

- Not cancer causing in animals, not studied in humans for carcinogencity
- Ingestion causes pain and inflammation in areas of contact along with erosion of mucous membranes. Aspiration can cause respiratory failure
- Addition to circulatory system will cause coma or cardiac arrest and/or death
- Skin contact causes irritation in the form of vesicular eruptions, eczematoid dermatitis, onycholysis, hair may reversibly fall off Very hazardous to environement, may chlorinate water[89]

-55-sodium lauryl sulfate[90]

- can cause allergic dermatological reactions
- can cause drying effect to skin, irritational to eye
- poison by intravenous, intraperitoneal, moderately toxic by ingestion
- when fatal poisoning was caused in animals, though symptoms seen were only diarrhea and intestinal bloating
- not irritating in ingestion if in low enough doses
- in ambient atmosphere the chemical exists in a particulate phase
- no mobility
- potential for bioconcentration in organisms is moderate
- Used in shampoos, hairdyes, toothpastes, hand dishwashing detergents; used in many cleaning compounds because of cleaning ability, mildness and foaming capability., Food additive (emulsifier and thickener)

- hydrogen peroxide[91]

- unknown carcinogenicity in humans though proven carcinogenic in animals
- if ingested, possibly severe gi damage can be done

-54-[88] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7681-52-9

[89] **Natriumhypochlorit**
Anonymous
Toxikologische Bewertung. Heidelberg, Berufsgenossenschaft der chemischen Industrie Vol:175 (1991) 49 p [German] [RISKLINE] TOXNET

-55-[90] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+151-21-3

[91] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7722-84-1

- can be very painful if gotten in eyes

-56-diethylene glycol monobutayl ether[92]

- reddening when dermal contact was made, not irritating
- various symptoms observed: cns depression, renal failure, muscular skeletal pain, organ lesions,
- not corrosive to resp tract
- lethal dose in humans: 1 ml/kg
- effects in animals are hemolytic: ie. Splenomegaly, anemia, hemoglobinuria, kidney damage
- no effects on sexual organs though there was a noted decrease in maternal body weight gain in rats
- very high soil mobility, becomes gas in atmosphere with a halflife of 7.2 hours
- not likely to absorb into soil, surfaces in water

-furniture and floor polishes

-metal polishes

-mothballs

-1- naphthalene[93]

-2- paradichlorobenzene[94]

- both chemicals are used primarily in most of moth ball products on the market
- dichlorobenzene linked to decreased lung function, could be issue for those resp disorders, has been linked to causing asthma[95]
- they work by creating a toxic odor for moths
- possible carcinogenesis in both, proven in animals, not humans(respiratory tumors in rats,).
- Very toxic and can cause damage if exposure to skin, eyes, throat (if inhaled), internal organs(if swallowed), can cause hemolytic anemia. Long term inhaling can cause liver, kidney damage.
- Very dangerous for fetus, infant

-2- cedar wood[96]

- alternative, safe, but more expensive(is this viable here?)

-3- air tight containers

- another option[97]

-56-[92] **DIETHYLENE GLYCOL**

111-46-6 HSDB

-57-[93] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+91-20-3

[94] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+106-46-7

[95] Elliott, L. *Environmental Health Perspectives*, August 2006; vol: 114 pp. 1210-1214.

-2- [96] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+8000-27-9

[97] http://www.checnet.org/healthehouse/chemicals/chemicals-detail-print.asp?Main_ID=292

-carpet cleaner
-dusting spray
-tub/tile cleaners
-upholstery cleaner
-laundry detergents

-41-2-aminoethanol(MEA)[98]

- Minor irritant to human skin
- Inhalation immediately causes dyspnea, asthma and acute liver damage and inflammation
- Rats, mice, and rabbits exposed to ethanolamine by daily inhalation exhibited respiratory tract irritation; histopathological examinations also showed some non specific mild degenerative changes of the liver and kidneys.
- Developmentally/reproductively toxic in chicken eggs though other studies show a lack of developmentally/reproductive toxicity
- Minor genotoxic effects in human lymphocytes, otherwise genotoxic effect not seen
- Very high mobility in soil
- Low bioconcentration in aquatic creatures
- Will most likely not absorb into sediments, soil

-42-sodium citrate[99]

- toxicity causes tetany, alkalosis and eventual death
- very limited information existing

-43-sodium aluminosilicate[100]

- An irritant to skin, eyes and mucous membranes
- Very limited toxic effects even at high doses on aquatic life
- No environmental impact suggested

-44-Sodium dodecylbenzenesulfonate[101]

- Skin irritant, emetic when swallowed
- Irritant to resp organs
- Low level feedings in rats have not produced systemic effects
- Mechanism of death is unknown at high doses
- Transient eye irritant in rabbits
- High mobility in soil
- Not expected to have an significant impact on aquatic systems or bio concentration in aquatic organisms

-45-C12-15 Pareth 11

- Form of aylkl ethy oxalates
- health concerns such as kidney, liver alteration, hormone

-41-[98] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+141-43-5m
-42-[99] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+68-04-2
-43-[100] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1344-00-9
-44-[101] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+25155-30-0

disruption(both estrogen and testosterone) [102] in rats and environmental[103] -concerns specifically with chemical survival in water, does cause sexually abnormal development in fish
- banned in Europe, under study in Canada and allowed in the usa

-1- Benzenesulfonic acid,[104](c10-c16 alkyl derivatives)
- limited impact in humans and environment though could impact daphnids/water fleas (cladoceran)(issue for county?)

-46-sodium citrate[105]
- toxicity causes tetany, alkalosis and eventual death
- very limited information existing

-57-sodium carbonate[106]
- irritation occurs in large quantities
- damage to mucous membranes can occur with a concentrated amount
- irritating to eyes not considered hazardous to environment though chemical can alter of the ph of an aquatic eco-system[107]

-58-Subtilisin[108]
- Biodegrable, high water solubility thereby having minimal environmental impact
- Can cause mild dermatological rash, besides this impact is minimal to human health

-59-Adipic acid[109]
- Exposure causes respiratory irritation
- Also irritating to skin and eyes
- moderate to severe eye irritation in rabbits
- in atmposphere it exists as both particle and vapor
- very high soil mobility
- bio concentration into organisms is low

-60-Grotan BK[110]
- can cause dermatological problems: rashes, eczema, vesicular lesions,

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[102] http://envirostats.files.wordpress.com/2007/08/endocrine-disruptors.pdf

[103] http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl2-lsp2/nonylphenol/nonylphenol_2_e.html

-1- [104] Anonymous, benzene, c10-c16 alkyl derivatives, screening information data set for high production volume chemicals

-2- [105] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+68-04-2

-3- [106] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+497-19-8

[107] anonymous, (2003) sodium carbonate, Screening Information Data Set for High Production Volume Chemicals. Found in toxnet.nlm.nih.gov

-58-[108] **Savinase'- Proteolytic enzymes in detergents**

Anonymous

NICNAS: Priority existing chemical assessment report Vol:2 (1993) pp 79 [RISKLINE]

-59-[109] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+124-04-9

-60-[110] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+102-71-6

- ingestion can cause alkali burns in oropharynx/esophagus
- not very harmful-minimum fatal dose would be about one pint for 70kg person
- minimal environmental impact though a large scale induction of triethanolamine into the water system can alter ph[111]

-61-sodium lauryl ether sulfate[112]

- surfactant and cleansing agent
- mild to moderate eye irritant
- 'safe' ingredient
- used in cosmetics, shampoos
- low mobility in soil
- will absorb into sediments, will not bioconcentrate in aquatic organisms

-62-WinSurf NLS-90

- Unknown
- Toxicologist?

-63-sorbitol[113]

- low toxicity, tissues changes return to normal after end of exposure
- limited info on animal testing, results show minimal effects
- used as sweetener, naturally found in fruit
- very high soil mobility
- readily biodegraded

-64-sodium gluconate[114]

- readily biodegradable
- found to have no effect in animal studies, fish studies
- used in meat, milk other foods

-65-borax[115]

- hair, respiratory irritant
- mild eye irritant
- Ingestion of 5 to 10 g by young children can cause severe vomiting, diarrhea, shock and death.
- Ingestion of borax by rats, produced significant decreases in body weight; in the weights of the testes, seminal vesicles, spleen, right

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[111] **Triethanolamine**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (1997) 2 p [RISKLINE]

-61-[112] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+3088-31-1

-62-[113] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+50-70-4

-63-[114] **Gluconic acid and its derivatives**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (2006) 231 TOXNET

-64-[115] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1303-96-4

femur; and in the levels of plasma triglycerides. At the highest dose level, spermatogenesis was impaired.
- Further studies also show decreased ovulation and spermatogenesis when added to rat diet
- At high doses cytotoxic and considered a weak mutagen
- When added to dropsophilla lifecycle the largest amount of boron were found in the larvae stages
- Naturally occurring in environment
- Very low mobility
- Concentrates in plants

-66-calcium chloride[116]
- very strong skin and mucous membrane irritant, has been recorded to cause skin to peel and perforation of the nasal septum
- eye contact with dust has caused transient corneal injury
- used as iv solution for hypocalcemic tetany
- Rock bass were killed by concentration of 555 mg/l/168 hr in tap water.
- Does not biodegrade or bioaccumulate
- Environmental information limited

-67-Sodium nonanoyloxy benzene sulfonate
- Information unknown-toxicologist

-47-sodium silicate[117]
- irritation to skin and corneal damage noted, if swallowed can cause v/d
- chemical can asphyxiate mussels in ecosystem
- renal lesions noted in dogs after being fed food containing sodium silicate [118]
- considered toxic in freshwater cladoceran population[119]

-48-sodium sulfate
- toxic in large enough quantities to marine eco system, can be buffered with calcium[120]

-65-[116] **CALCIUM CHLORIDE**
10043-52-4 HSDB

-66-[117] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1344-09-8

[118] **Final report on the safety assessment of Potassium Silicate, Sodium Metasilicate, and Sodium Silcate**
Anonymous

[119] **Toxicity of laundry detergent components to a freshwater cladoceran and their contribution to detergent toxicity.**
Warne MS; Schifko AD
Ecotoxicol Environ Saf. 1999, Oct; 44(2):196-206. [Ecotoxicology and environmental safety] [PubMed]

[120] **Importance of calcium in modifying the acute toxicity of sodium sulphate to Hyalella azteca and Daphnia magna.**

- behavioral effects on Ceriodaphnia dubia[121]
- health effects unknown, perhaps minimal

-49-cellulase

- asthma causing
- limited information, otherwise

-68-Sodium perborate tetrahydrate[122]

- Not toxic to development when studied on rats
- In large quantities can be acutely toxic to aquatic organisms[123]

-69-Alkyl (C10-C16) benzenesulfonic acid, sodium salt[124]

- Detergent surfactant
- Rapid biodegradation
- Little potential to bio concentrate
- Not acutely toxic but harmful to daphnids

-70-Alcohol ethoxysulfate salt[125]

- Carcinogenic
- Causes limited irritation
- Limited information

-71-sodium tetraborate[126]

- An intravenous dose of 14-20 g of sodium borate was administered for

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Davies TD; Hall KJ
Environ Toxicol Chem. 2007, Jun; 26(6):1243-7. [Environmental toxicology and chemistry / SETAC] [PubMed]

[121] **Bioenergetic effects of sodium sulfate on the freshwater crustacean, Ceriodaphnia dubia.**
Soucek DJ
Ecotoxicology. 2007, Apr; 16(3):317-25. [Ecotoxicology (London, England)] [PubMed]

-68-[122] **Rat embryo-fetal development study on sodium perborate tetrahydrate.**
Bussi R; Chierico G; Drouot N; Garny V; Hubbart S; Malinverno G; Mayr W
Teratology 1996 May;53(5):26A [DART]

[123] **Toxicity of laundry detergent components to a freshwater cladoceran and their contribution to detergent toxicity.**
Warne MS; Schifko AD
Ecotoxicol Environ Saf. 1999, Oct; 44(2):196-206. [Ecotoxicology and environmental safety] [PubMed]

-69-[124] **Benzene, C10-C16 alkyl derivatives**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (2004) 79 pTOXNET

-70-[125] **Letter to USEPA Regarding Information Developed on the Presence of 1,4-Dioxane in Two Specific Products, the Sodium and Ammonium Salts of Alcohol Ethoxysulfates (Sanitized).**
Govt Reports Announcements & Index (GRA&I), Issue 26, 2007 [NTIS] TOXNET

-71-[126] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1330-43-4

the purposes of neutron capture therapy to 10 patients, who experienced immediate nausea, vomiting, defecation, and occasionally seizures and respiratory depression.
    - Inhalation will cause Cough, shortness of breath, sore throat, nose bleed
    - Moderate irritation to skin and eyes
    - used in various cosmetic products, including make-up, skin and hair care preparations, deodorants, moisturizing creams, breath fresheners, and shaving creams; concentrations may be up to 5%
    - naturally occurring, deposited on areas after evaporation from salt lakes
    - accumulates in plants
    - mobility is slow

-72-sodium xylenesulfonate
    - of low toxicity
    - limited information existing..toxicologist?

-73-sodium alkylbenzene sulfonate[127]
    - fed to rats for 90 days…no harm reported even after dissection
    - very limited info, possibly harmless

-50-sodium sulfate
    - toxic in large enough quantities to marine eco system, can be buffered with calcium[128]
    - behavioral effects on Ceriodaphnia dubia[129]
    - health effects unknown, perhaps minimal

- Sodium hydroxide[130]
    - Studies widely show chemical is irritating and corrosive to surfaces it touches
    - Ingestion can be fatal\concern for children
    - Cannot reach female/male reproductive organs or foetus

-72-[127] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+68411-30-3

[128] **Importance of calcium in modifying the acute toxicity of sodium sulphate to Hyalella azteca and Daphnia magna.**
Davies TD; Hall KJ
Environ Toxicol Chem. 2007, Jun; 26(6):1243-7. [Environmental toxicology and chemistry / SETAC] [PubMed]

[129] **Bioenergetic effects of sodium sulfate on the freshwater crustacean, Ceriodaphnia dubia.**
Soucek DJ
Ecotoxicology. 2007, Apr; 16(3):317-25. [Ecotoxicology (London, England)] [PubMed]

[130] **Sodium hydroxide**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (2004) 112

- Damage to environment[water] depends or buffer level of ecosystem, ph level can be altered and toxicity in organisms is possible

-51-Ethanol [131]

- vapor is irritant to eyes, liquid is also irritating to eyes but no permanent damage
- ingestion can cause decreased involvement in frontal and posterior parts of the brain
- cns depressant
- cutaneous contact causes erythema
- Developmental effects on foetus through mother(unknown if this occurs through household products)
- Contact toxicologist also on the amount of applicability of research to household products-research primarily deals with alcohol ingestion therefore is of unknown use
- Unlikely to be persistent in environment
- naturally emitted from plants
- volatilization from moist soil surfaces is important in biodegradation

-52-sulfuric acid[132]

- carcinogenic
- destroys enamel of teeth
- mild respiratory irritation
- corrosion, causes necrosis quickly
- contact with eyes causes blindness
- respiratory contact with cause serious damage to lungs
- found naturally in volcanic gas
- toxic to environment
- high mobility in soil, dissolves soil in process
- component of acid rain
- also known as battery acid

-74-tryethylene glycol[133]

- reportedly not harmful to skin, eyes, resp system,/ not a health hazard to humans whatsoever
- basically harmless in animals except in very large doses that can delay developmental growth and cause kidney enlargment
- biodegradation is the only form of destruction of this chemical
- it is highly mobile in soil and has a long half-life in water
- its effects on aquatic organisms though are considered minimal

-75-Sodium dihydrogen citrate

-51-[131] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+64-17-5

-52-[132] **SULFURIC ACID**

7664-93-9 HSDB

-53-[133] **TRIETHYLENE GLYCOL**

112-27-6 HSDB

- Used as alternative to heparin flushes
- Used for lead treatment
- Limited info, possibly harmless

-76-citronella oil

- used in nonddt repellants
- candles
- other information very limited

-77-glycerine[134]

- Adverse effects following oral administration of glycerin include mild headache, dizziness, nausea, vomiting, thirst, and diarrhea.
- Severe dehydration, cardiac arrhythmias, and hyperosmolar nonketoic coma have been reported and may be fatal.
- Osmotic chemical
- Moderate injury to eyes, irritant but no permanent damage
- Very high mobility in soil
- Very high and very quick biodegradation
- Will not adsorb in sediment or concentrate in fish and aquatic organisms

-78-savinase[135]

- causes dermatitis
- irritant at higher levels
- 'unlikely to prevent adverse effects in humans'
- biodegrades quickly
- respiratory sensitizer
- non-toxic to fish

-79-Termamyl 330L enzyme

- Unknown

-80-Stoddard solvent[136]

- Inadequate info on carcinogenicity
- Men exposed to vapor for 30 minutes showed no adverse effects
- Contact produces follicular dermatitis
- Aspiration causes chemical pneumonia
- Preexisting liver disease in users could be problem because of decreased metabolism

-81-Terpene

- Component of turpentine
- Information unknown

-82-aluminum silicate[137]

-54-[134] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+56-81-5

-55-[135] **'Savinase'- Proteolytic enzymes in detergents**

Anonymous

NICNAS: Priority existing chemical assessment report Vol:2 (1993) pp 79 TOXNET

-56-[136] http://toxnet.nlm.nih.gov/cgi-bin/sis/sear#/r?dbs+hsdb:@term+#n+8052-41-3

- neurotoxic in animals
- of low toxicity
- not associated with illness in humans
- animal testing showed minimal effects\
- mutagenic to invitro cells
- neurotoxic in animals

-83-Nonoxynol[138]

- One case of dermatitis
- Another study showed no irritation or sensitivity
- Used as cosmetic product

-84-Sodium undecylbenzenesulfonate

- Unknown, not found

-85-Sodium perborate monohydrate[139]

- Use in denture cleaners has caused corrosive injuries to the mouth and esophagus
- 0.1-0.5 g/kg. Is a fatal dose
- irritant
- able to produce mutagenic changes in-vitro

-86-Sodium tridecylbenzenesulfonate[140]

- Sensitization, allergic reaction is rare
- Can cause disease of resp system
- 'moderately toxic'
- resistance to being broken down by microorganisms
- mild irritant on rabbit eyes
- mechanism of cause of death in animals at high doses..is unknown

- all purpose cleaners/multi purpose cleaners

-53-Sillica

- Carcinogenesis found in industrial studies (specifically lung cancer)[141]
- Environmental impact is considered minor when taking into account
- the amount of naturally occurring silica in both water and land[142]

-57-[137] ALUMINUM, ELEMENTAL
CASRN: 7429-90-5 HSDB
-58-[138] **NONOXYNOL**
26027-38-3 HSDB
-59-[139] **SODIUM PERBORATE**
7632-04-4 HSDB
-60-[140] **SODIUM TRIDECYLBENZENE SULFONATE**
CASRN: 26248-24-8 HSDB

[141] **Silica**
Anonymous
IARC Monographs on the evaluation of the carcinogenic risk of chemicals to humans

[142] **Synthetic Amorphous Silica**
Anonymous

-87-sodium carbonate[143]

- irritation occurs in large quantities
- damage to mucous membranes can occur with a concentrated amount
- irritating to eyes not considered hazardous to environment though chemical can alter of the ph of an aquatic eco-system[144]

-54-- Sodium dodecylbenzenesulfonate

- Skin irritant, emetic when swallowed
- Irritant to resp organs
- Low level feedings in rats have not produced systemic effects
- Mechanism of death is unknown at high doses
- Transient eye irritant in rabbits
- High mobility in soil
- Not expected to have an significant impact on aquatic systems or bio concentration in aquatic organisms

-88-2-Butoxyethanol[145]

- widely used solvent found in paints and varnishes
- readily absorbed via inhalation, dermal contact and oral exposure
- possible carcinogen(further studies needed to actually create proof)
- reportedly irritating to eyes and skin
- reportedly hemolytic effects in animals though humans seem resistant to hemolysis
- causes reproduction and developmental alterations in animals
- when in atmosphere becomes vapor, half life is 16hours
- high mobility in soil
- biodegrades rapidly in water
- low risk of being absorbed by aquatic organisms

-55-propane[146]

- can depress cns system at very high levels
- after exposure to person it can accumulate in breast milk
- volatile
- produces cns depression in various kinds of animals- specifically respiratory depression and distress
- can also cause skin burns
- can stay as atmosphere as part of smog for high amount of time since sunlight does not break it down
- not a significant problem for aquatic ecosystem unless in high amounts

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ECETOC Joint Assessment of Commodity Chemicals Vol:51 (2006) 221 p

-87-[143] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+497-19-8

[144] anonymous, (2003) sodium carbonate, Screening Information Data Set for High Production Volume Chemicals. Found in toxnet.nlm.nih.gov

-88-[145] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+111-76-2

-89-[146] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+74-98-6

since it takes awhile to breakdown

-56-isobutane[147]

- chemical found in air in high traffic areas, service stations, insect sprays, window and glass cleaners, personal spray deodearants, rug and upholstery cleaners
- in very high doses it causes respiratory /cardiac issues in animals
- human studies suggest it to be minimally harmful or even perhaps harmless
- biodegradable and has short half life. Does not accumulate in soil or in mammals.

-89-sodium carbonate[148]

- irritation occurs in large quantities
- damage to mucous membranes can occur with a concentrated amount
- irritating to eyes not considered hazardous to environment

-90-calcium carbonate

- inhalation/nasal exposure leads to minimal irritational symptoms
- if absorption is high enough systemic and renal effects could occur.
- Used in antacids and use in antacids has been associated with hypercalcemia and medical issues relating to hypercalcemia, including emergency pregnancies
- Association with cancer in industrial setting
- Adding dust to rabbits eyes or injecting rabbit with amount of alcium carbonate causes very little effect
- carcinogenic in animals
- causes low ph in aquatic species
- toxic at high enough levels
- pesticide, food additive, industrial finishes, coatings, Manufacturer of paint, rubber, plastics, paper, dentifrices, ceramics, putty, polishes, insecticides, inks, shoe dressings; as filler in production of adhesives, matches, pencils; crayons, linoleum, insulating compds, welding rods. cosmetics, pharmaceuticals, antibiotics; removing acidity of wines. in analytical chemistry for detecting and determining halogens in organic combinations; with ammonium chloride for decomposing silicates; preparing calcium chloride soln for standardizing soap soln; for water analyses.

-91-oil of orange[149]

- no sensitization, no irritation produced in humans/animals

-92-C12-15 Pareth 11

- Form of aylkl ethy oxalates
- health concerns such as kidney, liver alteration, hormone

-90-[147] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+75-28-5

-91-[148] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+497-19-8

-92-[149] http://toxnet.nlm.nih.gov/cgi-bin/sis##earch/r?dbs+hsdb:@term+@rn+8008-57-9

disruption(both estrogen and testosterone) [150] in rats and environmental[151] -concerns specifically with chemical survival in water, does cause sexually abnormal development in fish
- banned in Europe, under study in Canada and allowed in the usa

-93-limonene[152]
- occurs naturally in trees, bushes
- food additive
- skin irritant
- eye irritant
- in rats induces renal tumors
- high acute toxicity to chemical found in fish
- low mobility
- risk bioconcentration in aquatic organisms is high

-94-coconut diethanolomide
- information limited/unknown

-95-feldspar minerals[153]
- limited info
- known to have caused illness in germany by inhalation from local factory

-96-oxalic acid[154]
- very strong poison, as little as 5g has been known to be fatal
- neurotoxic
- application to eye causes severe burns
- like most acids when consumed it causes serious corrosion followed by circulatory shock and death
- not a significant threat to the environment

-57-pentasodium tripolyphosphate
- large ingestion causes vomiting, nausea, diarrhea…can lead to

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[150] http://envirostats.files.wordpress.com/2007/08/endocrine-disruptors.pdf

[151] http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl2-lsp2/nonylphenol/nonylphenol_2_e.html

-93-[152] **(D)-LIMONENE**
5989-27-5 HSDB

-94-[153] **ODOR CAUSED MASS ILLNESS AROUND A PLANT PRODUCING QUARTZ AND FELDSPAR BY FLOTATION**
LERCHER P ; KOFLER W
SEEMAYER, N. H. AND W. HADNAGY (ED.). ENVIRONMENTAL HYGIENE; FIRST EUROPEAN MEETING OF ENVIRONMENTAL HYGIENE, DUESSELDORF, WEST GERMANY, MAY 21-22, 1987. XIV+214P. SPRINGER-VERLAG: BERLIN, WEST GERMANY; NEW YORK, NEW YORK, USA. ILLUS. ISBN 3-540-19354-5; ISBN 0-387-19345-5.; 0 (0). 1988. 175-178. [BIOSIS] TOXNET

-95-[154] **OXALIC ACID**
144-62-7 HSDB

esophageal stricture
- damage to eye contact is moderately severe
- admin of chemical in diet decreased bone, liver and spleen contents of iron and increased the bone deposition of calcium
- environmental information unknown

-58-3-Isodecyloxypropaneamine, ethoxylated
- unknown

-59-Benzylethyldimethylammonium chloride
- Unknown

-60-Alkyl(C12-16)dimethylbenzylammonium chloride
- Unknown/limited info

-61-Sillica
- Carcinogenesis found in industrial studies (specifically lung cancer)[155]
- Environmental impact is considered minor when taking into account the amount of naturally occurring silica in both water and land[156]

-97-tetrasodium edta[157]
- when added to eye causes change in acid base balance and permanent damage
- intra venous application can cause severe hypocalcemia leading to tetany and death
- found to be genotoxic and fetotoxic in mice
- possible carcinogen
- limited info on environmental effects(toxicologist)

-98-dipropylene glycol monomethyl ether[158]
- no irritation found in skin patch tests
- irritating to respiratory passages though no organic injuries noted
- 0.5-0.6 ML/KG. Is the dose necessary via iv to kill a dog, death by respiratory arrest via cns depression, gastric corrosion noted
- low toxicity in general with animals
- when applied to eyes in rabbits it causes mild transitory reaction/irritation
- constituent of a variety of industrial and consumer products including

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[155] **Silica**
Anonymous
IARC Monographs on the evaluation of the carcinogenic risk of chemicals to humans

[156] **Synthetic Amorphous Silica**
Anonymous
ECETOC Joint Assessment of Commodity Chemicals Vol:51 (2006) 221 p

-97-[157] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+64-02-8

-98-[158] **DIPROPYLENE GLYCOL MONOMETHYL ETHER**
Synonym: **dipropylene glycol methyl ether**
34590-94-8 HSDB

hydraulic brake fluid, solvents, paints, dyes, household cleaners, cosmetics, and pesticide formulations.
- Highly mobile and will leach into ground water, otherwise environmental impact is minimal

-99-Sodium Hypochlorite[159]
- Not cancer causing in animals, not studied in humans for carcinogencity
- Ingestion causes pain and inflammation in areas of contact along with erosion of mucous membranes. Aspiration can cause respiratory failure
- Addition to circulatory system will cause coma or cardiac arrest and/or death
- Skin contact causes irritation in the form of vesicular eruptions, eczematoid dermatitis, onycholysis, hair may reversibly fall off Very hazardous to environement, may chlorinate water[160]

-100-octophenoxypoly (ethoxyethanol)
- ?? limited info, toxicologist?

-101- 2-Butoxyethanol[161]
- widely used solvent found in paints and varnishes
- readily absorbed via inhalation, dermal contact and oral exposure
- possible carcinogen(further studies needed to actually create proof)
- reportedly irritating to eyes and skin
- reportedly hemolytic effects in animals though humans seem resistant to hemolysis
- causes reproduction and developmental alterations in animals
- when in atmosphere becomes vapor, half life is 16hours
- high mobility in soil
- biodegrades rapidly in water
- low risk of being absorbed by aquatic organisms

-102-Triethanolamine[162]
- can cause dermatological problems: rashes, eczema, vesicular lesions,
- ingestion can cause alkali burns in oropharynx/esophagus
- not very harmful-minimum fatal dose would be about one pint for 70kg person
- minimal environmental impact though a large scale induction of

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-99-[159] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+7681-52-9

[160] **Natriumhypochlorit**
Anonymous
Toxikologische Bewertung. Heidelberg, Berufsgenossenschaft der chemischen Industrie Vol:175 (1991) 49 p [German] [RISKLINE] TOXNET

-101-[161] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+111-76-2

-102-[162] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+102-71-6

triethanolamine into the water system can alter ph[163]

-103-Alkyl (C12-C18) dimethyl benzyl ammonium chloride

- Ethane? Toxicologist info?

-62-- propane[164]

- can depress cns system at very high levels
- after exposure to person it can accumulate in breast milk
- volatile
- produces cns depression in various kinds of animals- specifically respiratory depression and distress
- can also cause skin burns
- can stay as atmosphere as part of smog for high amount of time since sunlight does not break it down
- not a significant problem for aquatic ecosystem unless in high amounts since it takes awhile to breakdown

-63-- isobutane[165]

- chemical found in air in high traffic areas, service stations, insect sprays, window and glass cleaners, personal spray deodearants, rug and upholstery cleaners
- in very high doses it causes respiratory /cardiac issues in animals
- human studies suggest it to be minimally harmful or even perhaps harmless
- biodegradable and has short half life. Does not accumulate in soil or in mammals.

-64-Butane[166]

- Dec. cns when airborne, can cause death with high enough concentrations
- In low airborne concentrations it can cause drowsiness
- Has been noted to cause myoclonus and severe frost bite when used in cleaners
- Possible developmental effects in foetus, has been found in breast milk
- environmentally it is an airborne pollutant and has a long half life when introduced to land or water. It has a moderate chance to stay within aquatic mammals

-65-ammonia[167]

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[163] **Triethanolamine**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (1997) 2 p [RISKLINE]

-62-[164] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+74-98-6

-63-[165] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+75-28-5

-64-[166] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+106-97-8

-65-[167] **AMMONIA**
7664-41-7 HSDB

- very hazardous to eyes
- irritation to respiratory tract is moderate..i.e inflammation of lungs generally occurs
- harmful as gas
- large amounts in a body can cause encephalopathy
- Ammonia is strongly adsorbed on soil, and on sediment particles and colloids in water. This adsorption results in high concentrations of sorbed ammonia in oxidized sediments.
- Limited info, doesn't seem to pose much of a threat environmentally

-66-Isopropanol[168]

- 8 oz(240 ml), but as little as 20ml in water can produce symptoms
- cns depressant
- possible cancer risk, report of paranasal cancers at plant where isopropanol was manufactured
- Severe poisoning presents early with deep coma, resp depression, and hypotension
- Found in breast milk in urban centers
- Very high soil mobility
- Low rate of bioconcentration in aquatic organisms
- Water is a key form of biodegradation

-67-ammonium chloride[169]

- fumes are respiratory, eye irritant
- causes acid/base imbalance
- symptoms include rash, headache, hyperventilation, bradycardia, progressive drowsiness, mental confusion, and phases of excitement alternating with coma. Calcium-deficient tetany, hyperglycemia, glycosuria, twitching, hyperreflexia, and EEG abnormalities have also been reported. Most of these adverse effects are secondary to ammonia toxicity resulting from inability of the liver to convert the ammonium ion to urea.
- Not considered environmental issues

-68-sodium metasillicate[170]

- 'most alkaline and corrosive substance in phosphate free products'
- case study of causing recurrent ulcerative lesions through contact
- when fed orally to dogs it caused polyuria,polydipsia, soft stools and renal lesions
- no environmental information found

-69-

-70-O benzyl P chloro-phenol[171]

-66-[168] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+67-63-0

-67-[169] **AMMONIUM CHLORIDE**

CASRN: 12125-02-9 HSDB

-68-[170] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+6834-92-0

-69-[171] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+120-32-1

- Associated with causing hyperbillirubinemia in children
- 'moderately toxic'
- when applied to rabbit eyes reaction was severe to cause blindness
- 'slight' mobility in soil
- 'moderate' ability to bioconcentrate in aquatic organisms

-104-Sodium lauriminodipropionate

- Very limited data
- Prevented from being used as a cosmetic because of limited testing/data[172]

-105-Grotan BK[173]

- can cause dermatological problems: rashes, eczema, vesicular lesions,
- ingestion can cause alkali burns in oropharynx/esophagus
- not very harmful-minimum fatal dose would be about one pint for 70kg person
- minimal environmental impact though a large scale induction of triethanolamine into the water system can alter ph[174]

-106-citric acid[175]

- used in food, drink preparations and also pharmaceutical creations and cleaners
- mildly irritating to gi tract after consuming, created nausea, diarrhea and indigestion
- inhalation causes coughing
- large enough intravenous doses cause hypocalcaemia and eventually cardiac arrest
- very irritating and damaging to eyes due to acidic content of substance
- can cause erosion of dental enamel
- high enough doses are cytotoxic, in animals when applied to the tongue in high doses it is ulcerative and causes lesions
- administration to rats can cause ataxia followed by other motor issues and then leads to respiratory and cardiac failure
- not carcinogenic or reprotoxic or developmentally toxic
- biggest is irritation to upper respiratory tract, eyes, skin
- highly mobile in soil
- low acute toxicity to marine organisms

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[172] **Final report on the safety assessment of Sodium Lauraminopropinate and Sodium Lauraminodipropionate**
Anonymous
Int J Toxicol Vol:16, Suppl. 1 (1997) pp 1-9 TOXNET

-105-[173] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+102-71-6

[174] **Triethanolamine**
Anonymous
SIDS. Screening Information Data Set for High Production Volume Chemicals. (1997) 2 p [RISKLINE]

-106-[175] http://toxnet.nlm.nih.gov/c#-bin/sis/search/r?dbs+hsdb:@term+@rn+77-92-9

- is not considered to be hazard to environment, quick biodegradableness

-71-sodium phosphate

- unknown perhaps limited toxicity (toxicologist
- used as tablets for colon cleanser for colonoscopy

-72-sodium sulfite[176]

- irritating to stomach lining if swallowed
- could be dangerous to asthmatics
- primarily a respiratory irritant
- considered 'moderately toxic'
- limited evidence for carcinogenicity in animals
- limited environmental information
- Experimentally, large doses of sodium sulfite have been shown to cause retarded growth, nerve irritation, atrophy of bone marrow, depression, & paralysis.

-73-acetone[177]

- natural occurring ketone body
- low toxicity
- reproductive toxicity shown in rats-i.e. testicular and sperm changes
- vapor can cause CNS depression, cardiorespiratory failure and death.

-74-2 hexoxyethanol[178]

- can produce CNS depression
- categorized as 'moderately toxic'
- skin and eye contact can be very serious
- severe eye damage when tested on rabbits
- environmental info unknown

-75-Naphtha[179]

- Naphtha is refined, partly refined, or unrefined petroleum products produced by the distillation of natural gas and/or curde oil.
- In workers exposed to a glue solvent, indications of slight renal tubular effects were reported.
- Petroleum naphtha vapor is a CNS depressant as well as an irritant of the mucous membranes and respiratory tract
- Correlation between pulmonary and upper respiratory tract mucous membrane symptoms.

-107-[176] **SODIUM SULFI##**
7757-83-7 HSDB
-108-[177] **ACETONE**
CASRN: 67-64-1 HSDB
-109-[178] **2-HEXOXYETHANOL**
CASRN: 112-25-4 HSDB
-110-[179] **NAPHTHA**
CASRN: 8030-30-6 HSDB

- Women who had been in contact with petroleum solvents were found to have a reduced estrogen level in the blood
- Found in breast milk in areas of environmental exposure
- High mobility
- In water will not absorb into sediment, soil
- In large quantities it will not biodegrade
- Moderate risk of bioconcentration in aquatic organisms

-76-Methanol

- Naturally occurs in humans. animals, plants
- Humans and primates have much more trouble metabolizing chemical than rats,dogs,rabbits and other smaller mammals
- Cause of death in humans is metabolic acidosis and neuronal toxicity
- Found to be reproductive and developmentally toxic in rats
- First symptom of toxicity is ocular changes
- 'Methanol is of low toxicity to aquatic organisms, and effects due to environmental exposure to methanol are unlikely to be observed, except in the case of a spill'.

-77-Polyethylene glycol[180]

- Very low toxicity
- No harmful effect to eye /skin
- Environmental info unknown but perceived to be low

-78-pine oil(alpha terpineol)[181]

- irritating to eyes and mucous membranes. Produce hemorrhagic gastritis when ingested. Systemic effects include weakness and central nervous depression, with hypothermia and respiratory failure
- found in breast milk in 1 in 8 women who reside in industrial areas
- genotoxic in bacteria tests
- low mobility
- volatilization from moist soil is high
- may adsorb to suspended solids and sediment
- high likelihood of concentration in aquatic organisms

-79-1-propoxy 2-propanol[182]

- severe injury on eye contact
- At high doses the /rats/ developed CNS depression & some evidence of kidney injury. The /rats/ that died did so within 24 hr.
- Very high mobility in soil
- Not expected to bioconcentrate in aquatic organisms or adsorb to soil

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[180] **POLYETHYLENE GLYCOL**
CASRN: 25322-68-3 HSDB

-78-[181] **ALPHA-TERPINEOL**
CASRN: 98-55-5 HSDB

-79-[182] **1-PROPOXY-2-PROPANOL**
CASRN: 1569-01-3 HSDB

and sediment

-80-oleic acid[183]

- irritating to skin and eyes
- Oleic acid in human blood reversibly altered the shape of erythrocytes, led to the reduction of viscosity of the blood in vitro, and reduced the erythrocyte sedimentation rate.
- Considered basically 'non-toxic'
- identified in various foods, such as brown rice and beef, released to the atmosphere in emissions from tobacco smoke, biomass combustion, coal/refuse combustion, veneer drying, and cooking hamburger meat.
- In soil or water-it will biodegrade

-81-dipropylene glycol[184]

- eye irritant
- mild skin irritant
- generally health effects reported
- Rats received 12% /dipropylene glycol/ in the diet for 15 weeks. The treatment resulted in depression of running activity. Moderate degenerative changes in kidneys were found
- High mobility
- dipropylene glycol is not expected to adsorb to suspended solids and sediment
- potential for bioconcentration in aquatic organisms is low

-82-N.N –dimethyl-N-Dodecylamine Oxide[185]

- Information basically unknown

Product choices based on ingredient information

Air fresheners

-emphasis should be on using non-air freshener solutions-

1 fresh coffee grounds on the counter
2 toss baking soda at the bottom of the trash can
3 keeps the house clean and open the window[186]
4 Sprinkle baking soda on carpets before vacuuming
5 Unscented kitty litter, vinegar or charcoal placed in a bowl [187]
6 Boiling cinnamon sticks, lemon leaves, orange leaves, lemon rinds, orange rinds,

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-80-[183] **OLEIC ACID**
112-80-1 hsdb
-81-[184] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+25265-71-8
-82-[185] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+1643-20-5
3 [186] http://www.time.com/time/health/article/0,8599,1664954,00.html
4 [187] http://www.environmentnetwork.org/Clean_Green.htm

grapefruit rinds, mints, herbs, vanilla, or cloves in water

7 Hang herbs to dry

8 Dab essential oils or vanilla extract onto a cotton ball and then place them around your home such, in the bathroom in a small basket, in a vase of flowers, hung around the house in elegant sachet made from recycled fabric, etc.[188]

Bathroom cleaners

1 Nature Clean Kitchen & Bath Cleaner(issue is potassium alkali)[189]
2 AFM SafeChoice Safety Clean Concentrated All-purpose Bath and Bowl Cleaner(unknown if sold in Canada)[190]
3 Nature clean Kitchen & Bath Spray Cleaner[191]
4 Nature Clean Toilet Bowl Cleaner - 20L/ 5 gal.[192]
5 Ecover Toilet Bowl Cleaner 750 ml[193]
6 ecoethic cream cleanser[194]
7 green works natural bathroom cleaner[195]

Bleach(most safe contain hydrogen peroxide which is a carcinogen in animals)

1 Seventh Generation Chlorine Free Bleach[196]
2 Nature clean Liquid Bleach - Non-Chlorine[197]
3 Arm & Hammer Liquid Detergent with Color Safe Bleach Alternate[198]
4 Vivid Liquid Laundry Bleach[199]
5 Vivid Ultra Liquid Laundry Bleach[200]
6 Clorox All Fabric Bleach[201]
7 Clorox Color Safe Bleach[202]

Dishwashing detergent

1 Ivory Liquid Hand Dishwashing Detergent[203]

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5 [188] http://www.aboutmyplanet.com/daily-green-tips/environmentally-friendly-4/
6 [189] http://www.grassrootsstore.c##/index.asp?PageAction=VIEWPROD&ProdID=231
7 [190] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=1028025
8 [191] http://www.shopnontoxic.com/naturecl#nliving/detail.aspx?ID=64
9 [192] http://www.shopnontoxic.com/naturecleanliving/detail.aspx?ID=99
10 [193] http://www.ecover.com/ca/en/Products/Cleaning/Toilet+Bowl+Cleaner.htm
11 [194] see msds printout in waste reduction file cabinet
12 [195] http://www.thecloroxcompany.com/products/msds/greenworks/launchgreenworksbc1007.pdf
13 [196] http://www.seventhgen.com/our_products/laundry/chlorine_free_bleach.html
14 [197] http://www.shopnontoxic.com/naturecleanliving/detail.aspx?ID=82
15 [198] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=3005018
16 [199] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=4003022
17 [200] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=4003024
18 [201] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=3007040
19 [202] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=3007041

2 Nature Clean Dishwasher Rinse Agent[204]
3 Nature Clean Dishwashing Liquid - Mandarin & Grapefruit[205]
4 Joy Liquid Hand Dishwashing Detergents[206]
5 Nature Clean Dishwashing Liquid - Unscented[207]
6 Ultra Dawn Liquid Hand Dishwashing Detergents[208]
7 Dawn simple Pleasures Liquid Hand Dishwashing Detergent with Air Freshener[209]
8 Nature Clean Dishwashing Liquid - Lavender & Tea Tree[210]
9 Non Ultra Dawn Liquid Hand Dishwashing Detergents[211]
10 Cascade Powder Automatic Dishwashing Detergent Powder[212]
11 Ecoethic dish washing liquid[213]
12 Seventh Generation, Free and Clear Automatic Dishwashing Powder[214]

Mothballs

1 store cedar chips, newspapers or lavender flowers with clothing
2 air tight containers

Laundry detergeants

1 Swish Clean-it™ Ultra Laundry Powder Detergent[215]
2 Down East Liquid Laundry[216]

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20 [203] http://www.pg.com/content/pdf/01_about_pg/msds/fabric_and_homecare/dishwashing_products/Ivory.pdf
21 [204] http://www.shopnontoxic.com/naturecleanliving/detail.aspx?ID=86
22 [205] http://www.shopnontoxic.com/naturecleanliving/detail.aspx?ID=87
23 [206] http://www.pg.com/content/pdf/01_about_pg/msds/fabric_and_homecare/dishwashing_products/Joy.pdf
24 [207] http://www.shopnontoxic.com/naturecleanliving/detail.aspx?ID=66
25 [208] http://www.pg.com/content/pdf/01_about_pg/msds/fabric_and_homecare/dishwashing_products/Ultra_Dawn.pdf
26 [209] http://www.pg.com/content/pdf/01_about_pg/msds/fabric_and_homecare/dishwashing_products/Dawn_Simple_Pleasures.pdf
27 [210] http://www.shopnontoxic.com/naturecleanliving/detail.aspx?ID=169
28 [211] http://www.pg.com/content/pdf/01_about_pg/msds/fabric_and_homecare/dishwashing_products/Non-Ultra_Dawn.pdf
29 [212] http://www.pg.com/content/pdf/01_about_pg/msds/fabric_and_homecare/dishwashing_products/Cascade_Pure_Rinse_and_Complete_Powder.pdf
30 [213] see msds in waste reduction file cabinet
31 [214] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=19039009
32 [215] http://www.swishclean.com/Products/Media/pdf/8013-10M#pdf

3 Simply Clean Laundry Detergent[217]
4 Simply Clean HE Laundry Detergent[218]
5 Green knight liquid laundry detergent[219]
6 Arm & Hammer Concentrated Detergent[220]
7 Tide Ultra Cold Water Granular Laundry Detergent[221]
8 Eco Ethic Liquid Laundry[222]
9 Simply Clean Dish Detergent[223]
10 Ariel Laundry Detergent Powder[224]
11 Cheer Granular Laundry Detergent[225]
12 Gain Liquid Laundry Detergent[226]
13 Gain Ultra[227]
14 Ivory Snow Liquid Laundry Detergent[228]
15 Tide High Effciency Detergent[229]
16 Orange Clean Liquid Laundry Detergent[230]
17 Simple Green All Purpose Cleaner-Lemon Scented[231]
18 Simple Green Concentrated Cleaner, Degreaser, Deodorizer[232]

All purpose/multipurpose cleaners

1 Orange Clean Multi Purpose Cleaner, Tough Acting Degreaser(possibly available only online)
2 Focus brand mp 11 multi purpose cleaner[233]*(made in new york)
3 Pine Sol Brand Cleaner[234]

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33 [216] http://www.bebbingtonindustries.com/msds/Down_East_Liquid_Laundry.doc
34 [217] http://simplyclean.ca/vervenaturals/simplyclean/assets/LaundryDetergent.pdf
35 [218] http://simplyclean.ca/vervenaturals/simplyclean/assets/HELaundryDetergent.pdf
36 [219] http://www.bebbingtonindustries.com/msds/GreenKnight_Liquid_Laundry.doc
37 [220] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=3005005
38 [221] http://www.pg.com/content/p#/01_about_pg/msds/fabric_and_homecare/detergents/Tide_Ultra_Coldwater_Granular_Laundry_Detergent.pdf
39 [222] see msds in waste reduction file cabinet
40 [223] http://simplyclean.ca/vervenaturals/simplyclean/assets/DishDetergent.pdf
41 [224] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=16003095
42 [225] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=16003338
43 [226] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=16003105
44 [227] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=16003062
45 [228] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=16003606
46 [229] http://www.pg.com/content/pdf/01_about_pg/msds/fabric_and_homecare/detergents/Ultra%20Tide%20HE%20Granular%20Laundry%20Detergent.pdf
47 [230] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=15010013
48 [231] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=19006001
49 [232] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=19006002
50 [233] http://www.focus-acs.com/easy#lutions.html

4 Swish Biogrease Control[235]
5 Formula 409 All Purpose Cleaner Antibacterial kitchen lemon fresh[236]
6 Formula 409 All purpose Cleaner antibacterial cleaner[237]
7 Enviro Solutions General Purpose Concentrate. 2x4.73[238]
8 Enviro-Solutions Super Hydrogen Citrus Concentrate[239]
9 Enviro Solutions #84 Neutral Floor Cleaner[240]
10 Enviro General Purpose[241]

Next Steps for future student:
Analyze local stores for products to ascertain if anything is missing from list or if something should be removed because it is unavailable or unfeasible.
Analyze geographical differences and location of production of products to decide on environmental footprint and decide if anything must then be removed from the product list.
Decide how to implement and transfer knowledge to the Green Shopping Guide(GSG).

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51 [234] http://hpd.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=3007088
52 [235] http://www.swishclean.com/product.htm?Product=6503-4&Source=Category&Category#ENERAL%20PURPOSE%20CLEANERS_ALL%20PUR
53 [236] http://www.thecloroxcompany.com/products/msds/409products/formula409antibacallpurposecleanerlemonfresh8-07.pdf
54 [237] http://www.thecloroxcompany.com/products/msds/409products/formula409antibacallpurposecleaner807.pdf
55 [238] http://www.swishclean.com/Products/Media/pdf/ES70-CSMS.pdf
56 [239] http://www.swishclean.com/Products/Media/pdf/ES71MSDS.pdf
57 [240] http://www.swishclean.com/Products/Media/pdf/ES84-CSMS.pdf
58 [241] http://www.swishclean.com/Products/Media/pdf/ES70MS.pdf