

Institute for Occupational Health and Safety Development - Philippines Chemical Hazard Project



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Institute for Occupational Health and Safety Development (IOHSAD) Philippines

IOHSAD is a non-stock, non-profit independent institution primarily engaged in assisting Filipino workers develop comprehensive and self-reliant occupational and environmental health and safety programs.

OSH in the Philippines

- “Hands off” government policy makes work deadly
- Voluntary compliance vs. mandatory labor inspection



Cleaning Product Company

- Research chemical hazards
- 593 total workers
 - 241 women
 - 252 men
- 12 hours workdays
- Foul/bad odor all the time, dusty
- No PPE given
- No ventilation





Chemical Hazard Project Scope

Chemical Hazard Identification

Research 6 different chemicals used by the workers of a soap / detergent / shampoo factory in the Philippines

Collect data on hazards, health effects, and controls. Create chemical fact sheets.

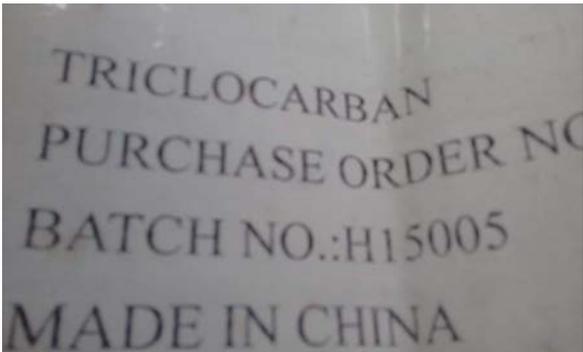
Poster Alerts

Develop targeted posters to help workers identify workplace health and safety concerns in their factory

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Chemical Hazards

Investigating the chemicals handled by workers



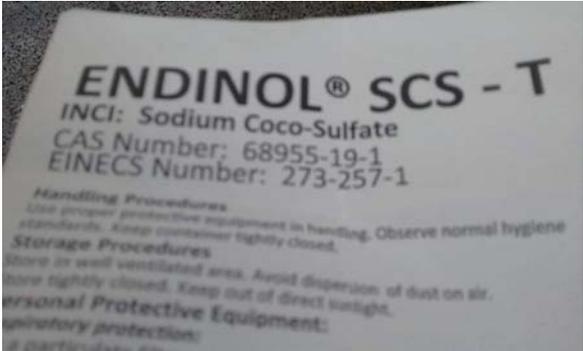
Triclocarban



“Supernova fircaps” (Limonene?)



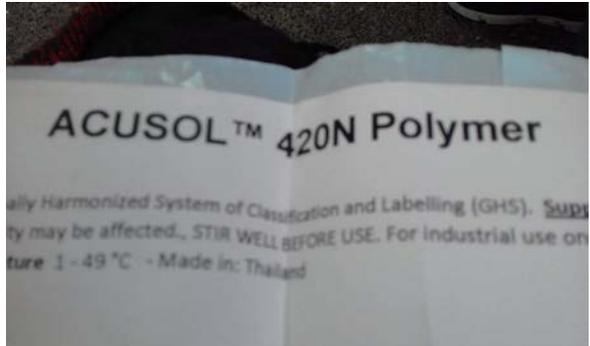
Smartenz 2315



Sodium Coco-Sulfate



Methyl Isopropenyl,
Cyclohexene,
Hexamethylindanopyran



Acusol 420N Polymer



The Process

- Review the literature
 - Pubmed, Webofscience, Newspapers
- Select epidemiologic and occupational health research for focus
- Assemble Chemical Hazard Fact Sheet



Chemical Hazard Fact Sheet

Supernova Fircaps, Limonene Chemical Hazard Fact Sheet

What is it?

Supernova Fircaps is an unknown substance and is thought to be the trademark name for a essential chemicals

Triclocarban Chemical Fact Sheet

What is it?

Triclocarban is a triclosan analogue with an antibacterial powder. Triclocarban interrupts cell membrane synthesis. When heated to decomposition, it releases toxic fumes of chlorine. This creates an odorous environment.

It is most known for being an endocrine disruptor and causing human body. This can be especially toxic to reproductive organs. It has been banned from being used in soaps as of 2017.

Where it is found and how it is used?

It is commonly found in household and personal care products.

How you can be exposed to it

As an endocrine disruptor, triclocarban can be extremely toxic to reproductive organs. Triclocarban may result in carcinogenesis of human body. Overtime, it can also cause reactive oxidative stress, proliferation and necrosis.

Most studies have demonstrated toxicity in animals. In rats, cancer cells developed and they experienced negative health effects on reproductive organs. Zebrafish is a model organism for high-dose exposure. Increased brain-specific expression of aromatase, altering Zebrafish embryos. Altered hormone regulation in animal embryos. In addition, reproductive toxicity and neurotoxicity have been observed in stillbirths, and cognitive issues.

Endinol - Sodium Coco-Sulfate Chemical Hazard Fact Sheet

What is it?

Sodium coco sulfate (SCS) is a synthetic detergent, meaning it is chemically altered to imitate a natural product that cleans, like soap. It is used for its strong cleansing power and high foaming action. It appears as white needles and is a strong oxidizing agent. Toxicity of SCS includes being a category 2 skin irritant, category 1 eye damage, category 4 acute oral toxicity, category 2 acute aquatic toxicity, and category 3 chronic aquatic toxicity.

SCS is made from a blend of fatty acids from coconut oil. In some cases, sodium lauryl sulfate (SLS) is mixed in at the manufacturers discretion, and is extremely toxic by itself. Turns out, SCS contains SLS; the difference lies in the science. The process to make SCS involves a chemical reaction that isolates one fatty acid from either petroleum jelly, coconut oil or palm oil. Whereas SCS is derived from a blend of fatty acids from coconut oil. While we all know and love coconut oil, its science lab derivatives aren't completely natural ingredients. In the blend of fatty acids that SCS is, SLS is mixed in, with amounts only at the manufacturers discretion. Additionally, SCS may be contaminated with 1,4-Dioxane which is a known human health hazard.

Where is it found and how is it used?

It can normally be found in shampoos, body washes, or toothpastes. Foaming detergents may also contain SCS.

How you can be exposed to it (acc or nature)

Mixing SCS into cleaning products exposes workers to the chemical. Additionally, using the product to clean material will expose individuals as well. As a synthetic chemical, workers and consumers are the most at risk for exposure.

- Created chemical hazard fact sheets detailing:
 - What is it?
 - Where is it found and used?
 - How can you be exposed?
 - How it works? (tox)
 - Immediately signs and symptoms
 - Long term health effects
 - How to protect yourself
 - How to treat poisoning



What if literature or data were not available?



The Investigation

- Smartenz 2315?
 - Customized blend of “safe” enzymes
 - Made by DuPont

- Acusol 420N
 - Polymer mix
 - Made by Dow

SMARTENZ™ Customized Blends

Your vision, mixed with
our solutions, makes a
powerful blend.



Product	Molecular weight	% Solids	Properties
ACUSOL 402 ACUSOL 402N	2000	48 43	Calcium carbonate scale inhibitor (anti-encrustation).
ACUSOL 420N ACUSOL 420NG	2000	49 92	Anti-scalant for highly precipitating builders (anti-encrustation), dispersant for organic and inorganic soils (anti-greying). Anti-filming agent. Bleach stabilizer



Requests for information

- Sent email contact form for information
- Called both companies asking for safety data sheets



Requests for information

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- Called both companies asking for safety data sheets

The Results...

- Only Dow sent Acusol 420N SDS

(CHRISTOPHER (CDLUDLUM) LUDLUM) (

Hello Nicholas,

Thank you for your inquiry.

Attached is the SDS you have requested.

Regards,

Chris L.
Dow Consumer Solutions



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Poster Alters

Making workers aware of the chemical hazards, symptoms, and possible controls

CLEANING PRODUCT HAZARDS

CHEMICAL MAKE-UP



- Triclocarban
 - Endocrine disruptor
 - May cause cancer
- Sodium coco-sulfate
 - Skin irritant
- Sodium polyacrylate
 - Toxic to skin, eyes, and stomach
- Limonene
 - Skin sensitization that causes extreme reactions
- Methyl isopropenyl Cyclohexane Galaxolide
 - Endocrine disruptor
 - Skin irritant

COMMON SYMPTOMS

- Occupational-related asthma
- Skin rashes after contact with chemical
- Nausea, fatigue, and dizziness

WORKPLACE CONTROLS

Engineering controls - proper ventilation and storage of chemicals

Administrative controls - safe handling policies and reporting of dangerous work practices

Personal protective controls - wear nitrile gloves, safety goggles, and N95 masks



PAGILINIS NG MGA PANGANIB NG PRODUKTO

KEMIKAL NA SANGKAP



- Triclocarban
 - Upang maputol ng mga hormones
 - Nakaka kanser
- Sodium coco-sulfate
 - Pamumula ng balat
- Sodium polyacrylate
 - Nakakalason sa balat, mata, tiyan
- Limonene
 - Talagang masama pamumula ng balat
- Methyl isopropenyl Cyclohexane Galaxolide
 - Upang maputol ng mga hormones
 - Pamumula ng balat

ANONG IYONG

INARARMDAMAN

- Hika bakahikain
- Pamumula ng balat
- Nagsusuka, napapagod, nahihilo

MGA KONTROL SA LUGAR NG TRABAHO

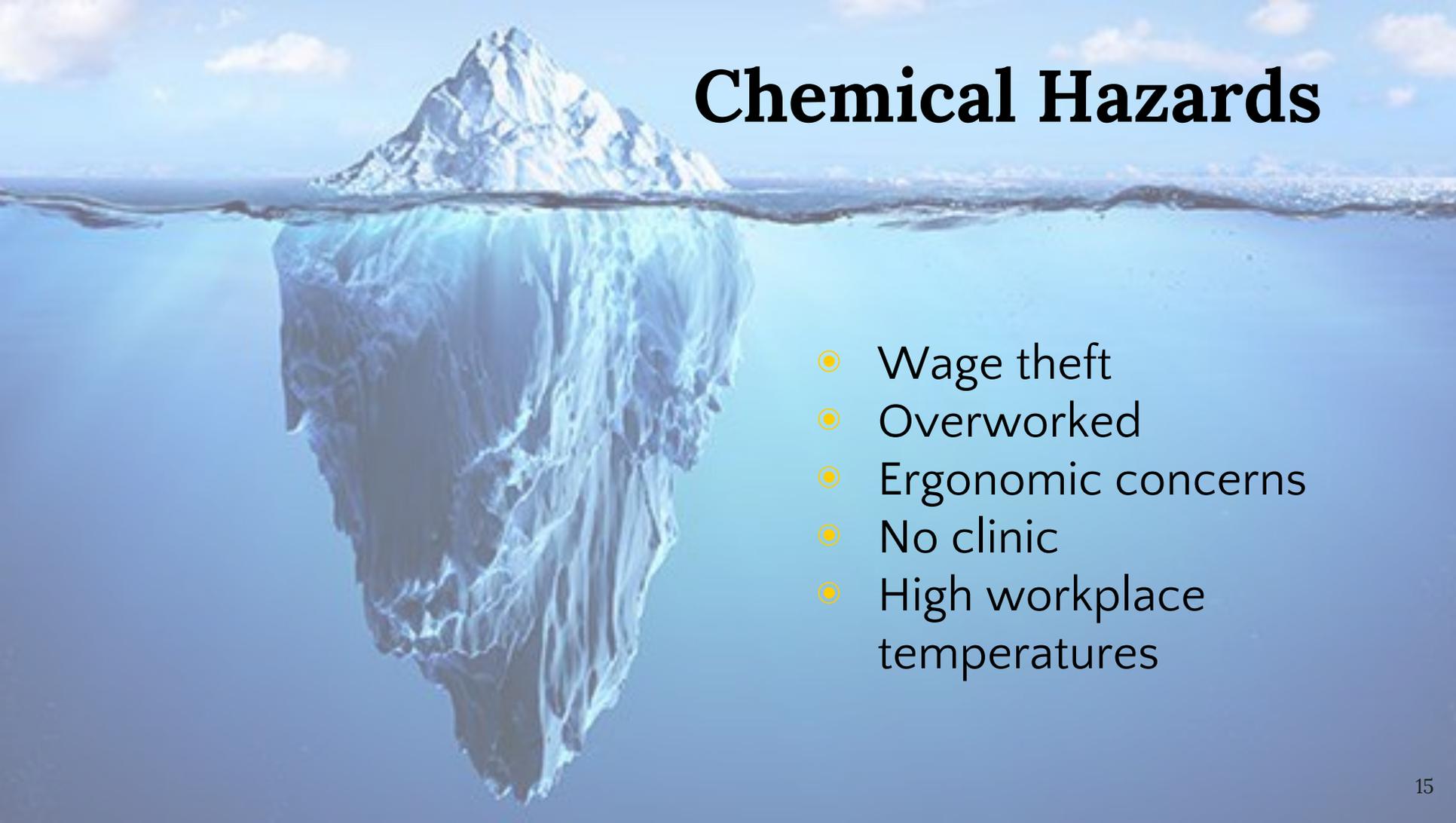
Sa pamamahala ng inhinyero - tamang bentilasyon, silid kemikal

Administrasyon kahulugan - ligtas na pamaraan

Mga personal na proteksyon - isusuot guwantes ng nitrile, maskara N95, kaligtasan salaming de kolor



● Readable and understandable to workers and supervisors

An iceberg floating in the ocean. The tip of the iceberg is above the water surface, while the much larger, jagged base is submerged underwater. The sky is blue with some clouds, and the water is a clear blue. The overall scene is used as a metaphor for hidden dangers.

Chemical Hazards

- ⦿ Wage theft
- ⦿ Overworked
- ⦿ Ergonomic concerns
- ⦿ No clinic
- ⦿ High workplace temperatures



Next Steps

- IOHSAD providing comments and edits to the materials sent
- Developing survey to assess
 - Effects of handling chemicals
 - Culture of workplace health and safety
 - Current needs
- Goal is to develop a comprehensive document on hazardous chemicals in these factories



In conclusion

Strengths

- Comprehensive chemical fact sheets with epi literature
- Identifying factory exposures to associations to health effects

Limitations

- Time difference makes it hard to communicate
- Local events and other campaigns taking precedence over project
- Translating for the layperson



Thanks!

Any **questions** ?