Institute for Occupational Health and Safety Development - Philippines
Chemical Hazard Project
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
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 potential 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 carbon monoxide. This creates an odorous environment.

It is most known for being an endocrine disrupter and may damage the human body. This can be especially toxic to reproductive systems, and has banned triclocarban from being used in soaps as of 2022.

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 disrupter, triclocarban can be extremely harsh to triclocarban may result in carcinogenesis of human breast cells and malignant. Overtime, it can also cause reactive oxidative stress and proliferation and neurosis.

Most studies have demonstrated toxicity in animals. In rats, cancer cells developed and they experienced negative health effects in their reproductive organs. Zebrafish is a model organism for human toxicity in triclocarban, with increased brain-specific expression of aromatase, altering Zebrafish embryo. Altered hormone regulation in animal studies as well as reproductive toxicity and neurotoxicity have been documented in stillbirths, and cognitive issues.

Endrin - Sodium Coco-Sulfate
Chemical Hazard Fact Sheet

What is it?

Sodium coco sulfate (SCS) is a synthetic detergent, meaning it is chemically altered to mimic a natural product that cleans, like soap. It is used for its strong cleaning power and high foaming action. It appears as white needles and is a strong oxidizing agent. Toxicity of SCS includes:

- Category 2 skin irritant
- Category 4 skin corrosion, category 1 eye damage
- Category 2 acute aquatic toxicity
- Category 3 chronic aquatic toxicity

SCS is made from a blend of fatty acids from coconut oil. In some cases, sodium laurel 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 SLS involves a chemical reaction that involves our 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 they 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 added in, with amounts only at the manufacturers discretion. Additionally, SCS can 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 (occ. or nature)

Mixing SCS into cleaning products expose workers to the chemical. Additionally, using the products to clean metal will expose individuals as well. As a synthetic chemical, workers and consumers may both be at a risk. Additionally, the use of SCS can be reduced by opting for natural alternatives.

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 DuPoint

◉ Acusol 420N
  ○ Polymer mix
  ○ Made by Dow

SMARTENZ™ Customized Blends
Your vision, mixed with our solutions, makes a powerful blend.
Requests for information

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

- Only Dow sent Acusol 420N SDS
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
  Cylohexane
  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 balot, mata, tyan
- Limonene
  Talagang masama
  Pamumula ng balat
- Methyl isopropenyl
  Cylohexane
  Galaxolide
  Upang maputol ng mga hormones
  Pamumula ng balat

ANONG IYONG INARARMDAMAN
- Hika bahakihain
- Pamumula ng balat
- Nagsusuksa, napapagod, nahihihi

MGA KONTROL SA LUGAR NG TRABaho
Sa pamamahala ng inhinyero - tamang ventilasyon, silid kemikal
Administrasyon kahulugan - ligtas na pamaaraan
Mga personal na proteksyon - isusucot guantes ng nitrile, maskara N95, kaltasan salaming de kolor

- Readable and understandable to workers and supervisors
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 epidemiological 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?