Five New & Emerging Industrial Solvents
What We Know, Don’t Know, & Should Know
About Their Health Effects

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Hazard Evaluation System & Information Service (HESIS)

Established to help prevent workplace illness and disease from toxic chemicals

- Identifies and evaluates new and unappreciated workplace chemical hazards
- Issues hazard alerts and develops and disseminates fact sheets and other chemical hazard information
- Recommends protective occupational health standards for toxic chemicals
New & Emerging Solvents
Toxicity & Health Concerns of Existing Solvents

Nervous System (Brain)

**Acute or short-term**
- nausea, dizziness, clumsiness, drowsiness (like being drunk)

**Chronic or long-term**
- fatigue, sleeplessness, poor coordination, difficulty concentrating, short-term memory loss, personality changes (depression, anxiety, and irritability). Long-lasting and possibly permanent damage.
Some New & Emerging Solvents

Five New Solvents

- 1-Bromopropane (1-BP)
- Decamethylcyclopentasiloxane (D5)
- N-Methyl Pyrrolidone (N-MP)
- Parachlorobenzenetrifluoride (PCBTF)
- 1,2-Trans-Dichloroethylene (1,2 DCE)
New & Emerging Solvents
Some General Concerns

- Structurally similar to known toxic chemicals
  (1-BP; 1,2-DCE; D5)

- Environmentally safe, but known chronic toxicity
  (1-BP; N-MP; D5)

- Widespread use anticipated

- Incomplete toxicological/health hazard information

- No mechanism to identify specific workplaces where in use

- MSDSs difficult to obtain; often not useful
1-Bromopropane (1-BP)
What We know, Don't Know, Should Know

◆ Structurally similar to DBCP and EDB
◆ Male and female reproductive toxicant in animals
◆ Developmental toxicant in animals
◆ Nerve damage in humans & animals
◆ Absorbed through intact skin
◆ Unregulated by Cal/OSHA
◆ Carcinogenic?
N-Methyl Pyrrolidone (N-MP)
What We Know, Don’t Know, Should Know

- Developmental toxicant in animals
- On Prop 65 List
- Methylene Cl substitute
- Irritant; corrosive
- Unregulated by Cal/OSHA
- Aerosol, liquid, & paste
- Safe levels for workers?
Decamethylcyclopentasiloxane (D5)
What We Know, Don't Know, Should Know

◆ Liver toxicant in animals; female rats more sensitive
◆ OEHHA REL = 46 ppb
◆ Dow recommended exposure limit = 10ppm
◆ Positive preliminary animal cancer data; no final results
◆ Drycleaning substitute for perc; in automotive cleaners
◆ Human exposure & health effects data?
1, 2-Trans-Dichloroethylene
What We Know, Don’t Know, Should Know

- Structurally similar to vinyl chloride
- Preliminary chronic toxicity studies (cancer, repro) appear to be negative
- General solvent toxicity effects CNS or brain
- Cal/OSHA PEL= 200 ppm based on acute nervous system effects
New and Emerging Solvents

Some of the Challenges We Face

- Lack of integrated environmental protection and occupational health and safety strategies
- Insufficient chronic testing & delays in final reports and regulatory actions
- New/unregulated chemicals & new uses of existing chemicals
- New industries, technologies, workforces
- Difficulty identifying where chemicals are used in California