

# Five New & Emerging Industrial Solvents

## What We Know, Don't Know, & Should Know About Their Health Effects

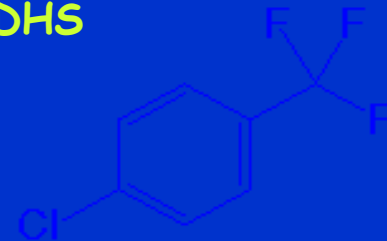
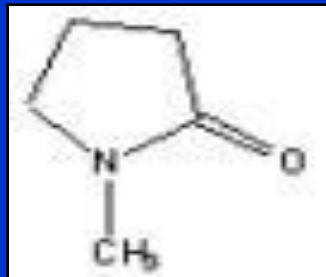
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[www.dhs.ca.gov/ohb](http://www.dhs.ca.gov/ohb)

WRPPN 2004

San Diego, CA



PCBTF

# 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.

STATE OF CALIFORNIA  
DEPARTMENT OF HEALTH SERVICES  
DEPARTMENT OF INDUSTRIAL RELATIONS

**HEISIS**  
2151 Berkeley Way  
Berkeley, California 94704  
Call Collect (415) 540-3014

**HAZARD ALERT**  
HAZARD EVALUATION SYSTEM AND INFORMATION

**Glycol Ethers  
(Cellosolve® Solvents)**

Two glycol ethers, commonly called Cellosolves®, are non-reproductive systems of male and female test animals. Defects and damage to the male animals' testes at low exposure limits for workers. It is not known whether the humans.

The two chemicals are widely used industrial solvent recently been treated as relatively safe. Because of the effects, HEISIS has recommended that the legal exposure in Cal/OSHA has recommended to its Advisory Committee that it is a well-ventilated workplace and careful work practices can exposure to these solvents.

**MANY PRODUCTS CONTAIN GLYCOL ETHERS**

Glycol ethers are a family of several solvents. They are used as ingredients in cleaning and thinning agents, and in sprays, wood stains, varnishes, paints and inks. Two of subject of this Alert:

Ethoxyethanol (EE)	Methoxy
Trade Names	Trade
Cellosolve® Downanol EE® Polysolve EE® Oxitol®	Methyl Cellosolve Downanol EM® Polysolve EM® Methyl Oxitol®
Chemical Names	Chem
2-Ethoxyethanol Ethylene Glycol Monoethyl Ether	2-Methoxyethanol Ethylene Glycol

A glycol ether may be in a product but not listed on the if you're working with a glycol ether, ask your supervisor for a Material Safety Data Sheet (MSDS) for each of the

\*Cellosolve® is the trade name for one glycol ether (ethoxyethanol) commonly used for the whole family of chemicals. This alert only to the two glycol ethers listed above and their acet

**n-Hexane Use in Vehicle Repair**

Long-term overexposure to n-hexane can damage the nerves in the feet, legs, hands, and arms. The damage may last a long time and may become permanent. The symptoms include numbness, tingling, weakness (sometimes even paralysis), and reduced ability to feel touch, vibration, and temperature. Short-term overexposure can cause headaches, dizziness, loss of appetite, and drowsiness. Health effects have only been reported when exposures were above OSHA's Permissible Exposure Limit (PEL).

People working with n-hexane can easily be exposed to levels that hurt. This Health Hazard Advisory was prepared by OSHA to help you identify and control n-hexane in your workplace.

Health Hazard Advisory

**How to work with n-Hexane**

n-Hexane is a solvent it's used mainly in automotive products. Commercially available n-hexane usually contains 30% to 80% n-hexane, so you should read all labels for n-hexane. Pure n-hexane is a colorless, very flammable liquid that evaporates rapidly with a faint, disagreeable odor. In addition to the recent cases among auto mechanics, n-hexane damage from hexane exposure has been reported among workers making jet engine parts, furniture, shoes, sandals, and vegetable oil, and during printing press production. Other workers likely to be exposed to hexane include laboratory workers, construction workers, and retail fuel n-hexane is used in laboratories.

If you may be exposed to hexane at work, ask to see the Material Safety Data Sheet (MSDS) for each product and parts cleaning product in your work area. Your employer must have an MSDS for any work area and product that contains a hazardous substance, and must make the MSDS available to you on request. If a product contains n-hexane, the MSDS should identify it in section 2 by the CAS number 110-26-24-1.

**Do you use any of these products?**

Ample Brake Parts Cleaner  
Berwyn 8-12 Chemical Corp and Choke Cleaner  
Berwyn Chemical Air-In-Take Cleaner  
Berwyn Non-Chlorinated Brake Cleaner  
Certified DyeK P2 Aerosol  
Continental Research Brake Master  
Duramond American Corp State  
Locite Brake Cleaner  
Locite Plus Brake Cleaner  
Locite ODC-Free Cleaner and Degreaser  
Locite Pro Strength Degreaser  
Malco Brake and Part Wash  
Malco Carb, Choke and Injection Cleaner  
Master DTC P2 Aerosol  
Paraph Non-Chlorinated Brake Grease  
Squonk Stylomex Non-Chlorinated Brake Cleaner  
Spermin Williams Automotive Cleaner  
Spermin Williams Brake Part Wash  
Spermin Williams Choke Degreaser  
Spermin Williams Non-Chlorinated Brake Cleaner  
Spermin Williams Part Wash  
Tylor Mable Non-Chlorinated Brake Cleaner  
Tylor Mable High-Flow Chlorinated Brake Cleaner  
Technical Chemical Non-Chlorinated Brake Cleaner  
Winters Brake Cleaner Non-Chlorinated  
Winters Brake and Part Cleaner (liquid and aerosol)  
Zep Aerosol Brake Cleaner  
Zep Brake Wash (liquid)  
Zep Brake Cleaner (aerosol)

There are some products reported to contain hexane in a recent survey. However, products like these can change their ingredients often. Be sure to check the MSDS for whatever products you're using.

California Department of Health Services • California Department of Industrial Relations

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Occupational Health Branch  
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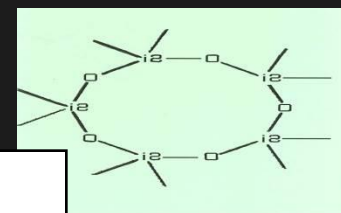
# Some New & Emerging Solvents

## Five New Solvents

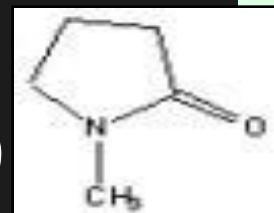
◆ 1-Bromopropane (1-BP)



◆ Decamethylcyclopentasiloxane (D5)

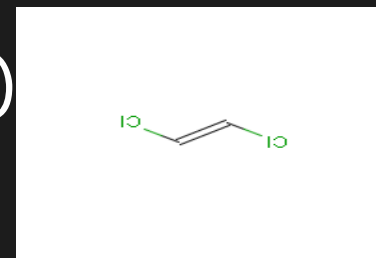


◆ N-Methyl Pyrollidone (N-MP)



◆ 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

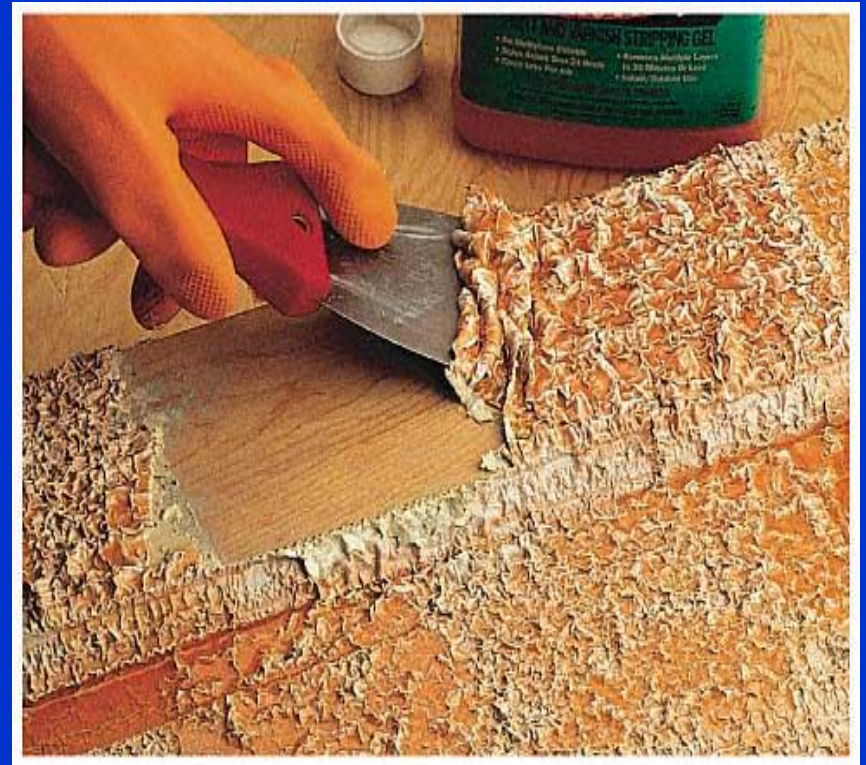


- ◆ Carcinogenic?

# 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