

Planning for Environmental Health and Safety Issues in Schools

Do you know where your
chemicals are?



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Why Be Concerned About Chemical Management?

- **Health hazards: immediate & long-term**
- **Safety hazards: stability of shelves, storage methods and incompatibility**
- **Environmental harm: groundwater, discharges to streams/rivers, air pollution**
- **Hidden costs/liabilities: lawsuits, fines, paperwork/fees, insurance premiums, etc**



Where Are the Chemicals?

- Maintenance Areas
- Vocational Shops
- Science Laboratories
- Art Classrooms
- Storage Closets

In other words, they are found **throughout** the school.



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Examples

Poor Management Practices

- Water reactives near/under sink
- Heavy containers on high shelves
- Corrosives on (corroded) metal shelves
- Flammables stored on wood
- Alphabetical storage (incompatible?)
- Unlabeled/"mystery" contents
- Chemicals next to food



Incompatible Chemical Storage



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Over Purchasing and Underestimating Hazards



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Poor Choice of Chemicals (high flammability material)



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Metal Shelving Deterioration



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Excess Chemicals in Storage



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Inappropriate Storage



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No Security: Easy Access to All



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Bottles as structural support
for shelf above them
Need disposal but can't move them



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Unintended Chemical Reaction



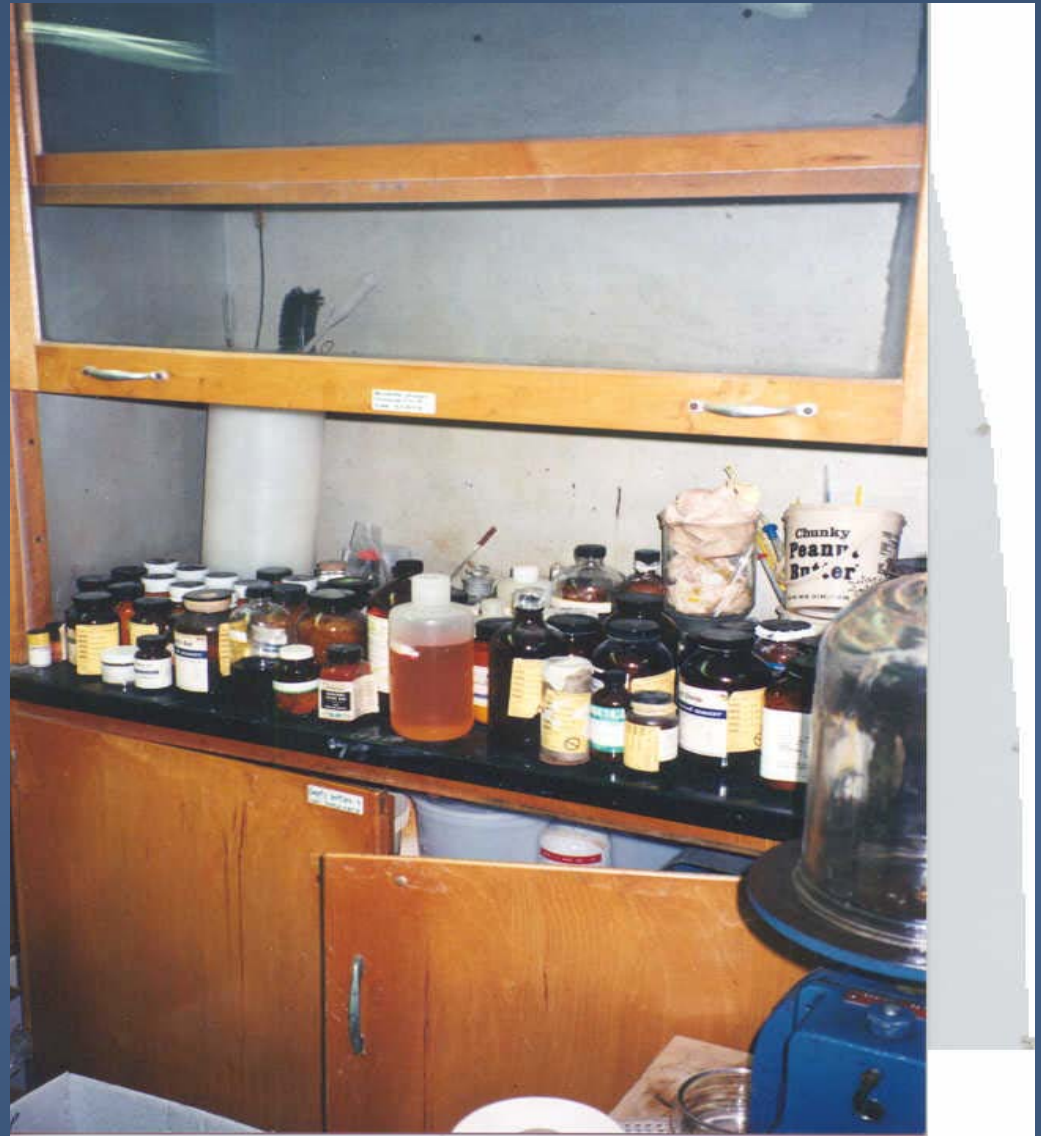
Imminent Risk Nitric Acid + Cyanide



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Dysfunctional Fume Hood



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Nitric “Gnome”



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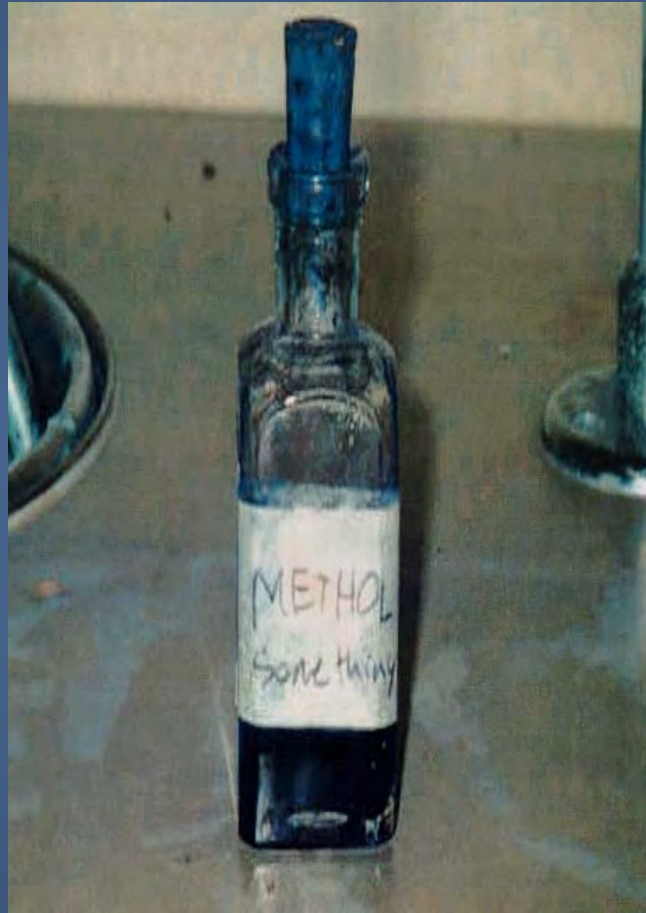
Improper Storage of Water Reactive



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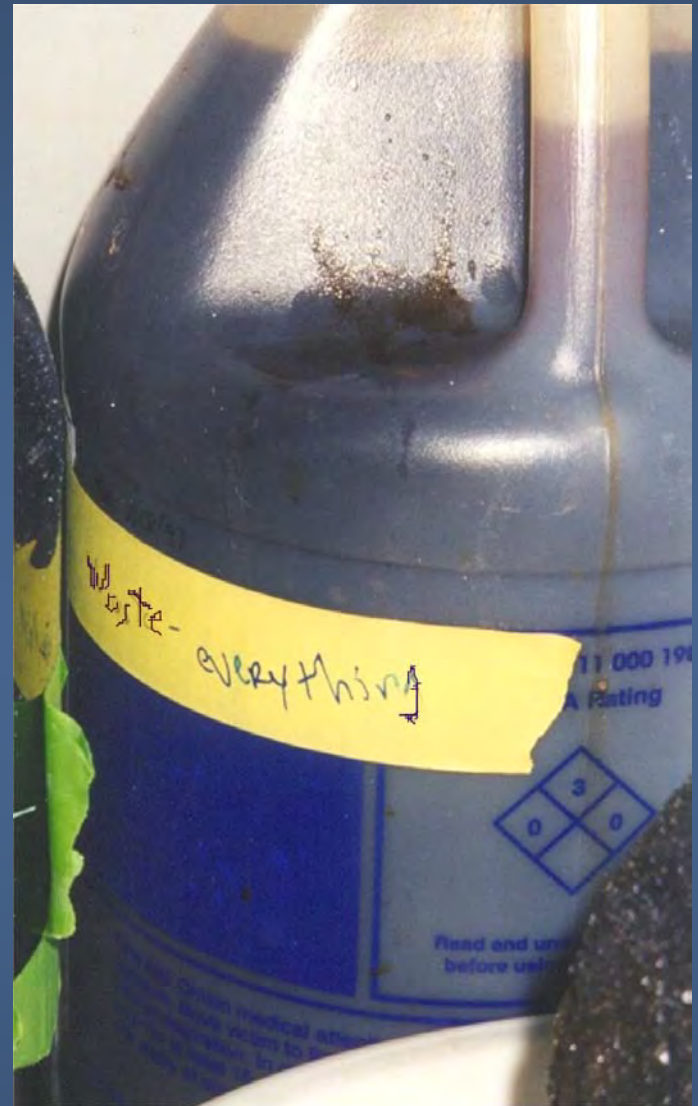
At least we know it's organic...



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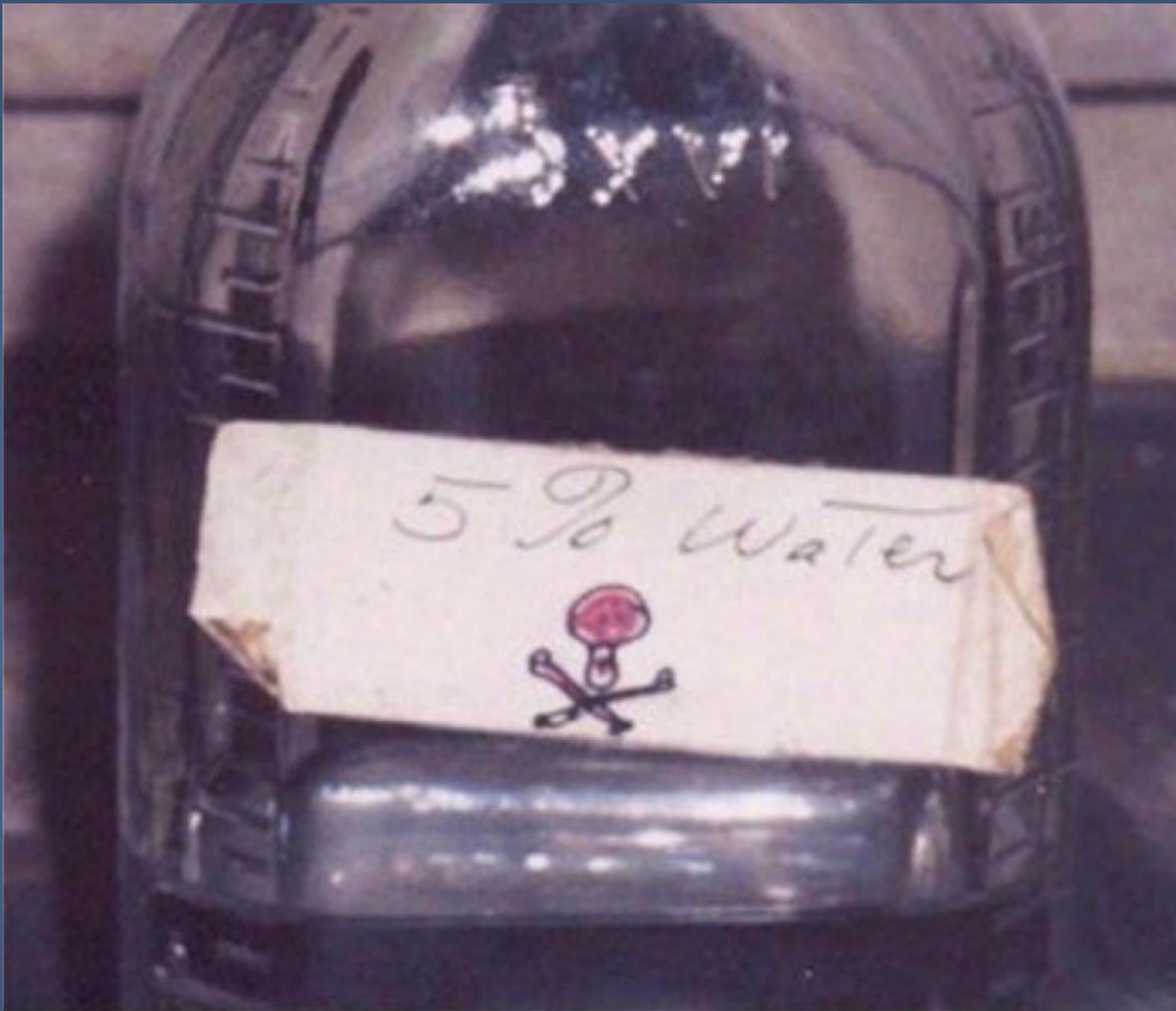
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What IS it????



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Why Do I Need to Plan for Chemical Management?

- Chemical emergencies in schools are continually occurring across the nation. Children and staff are at risk.
- Cleaning up chemical spills more costly than removing the chemicals from schools and implementing preventive measures.



Schools Chemical Cleanout Campaign (SC3)

- **Remove** outdated, unknown, excessive, or unnecessarily hazardous chemicals from secondary schools;
- **Prevent** future stockpiles and reduce accidents by establishing prevention activities such as good purchasing and management practices;
- **Raise national awareness** of the problem.



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Costs and Benefits of Such a Program

- **Cleaning up after an incident is costly:**
 - Cleanup can cost over a million dollars, cause closure of schools, and relocation of students.
- **Cleanout and prevention programs are good investments:**
 - Cleanout costs average \$5,000 per school, but can be \$30,000 or more if radioactive or explosive chemicals are involved.
 - Prevention programs can eliminate potential incidents.



Case Study

This case study illustrates how the clean up of one very minor mercury spill cost more than a planned cleanout of mercury at 81 sites.

Proactive

- In “Rehab the Lab” program, 81 sites had either bulk mercury liquid, mercury thermometers, or more both.
- Total cost for packaging, transport and disposal of the mercury for all **81 sites** was **\$24,300**.

Reactive

- Small amount of mercury spilled on a carpet.
- Costs
 - Bad publicity
 - Virtual paralysis of the facilities maintenance program for a couple weeks
 - Potential exposure
 - One site cost over \$30,000 for disposal



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What Can You Do?

Short Term Actions

- **Learn about chemical hazards**
- **Learn about requirements at various levels**
 - **Federal (e.g. OSHA HazCom, Chem RTK)**
 - **State**
 - **Local (e.g. building or fire code)**
 - **District**



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Short Term Actions

- **Build awareness in**
 - Administration
 - Business Officials
 - Purchasing
 - Facilities / Maintenance

- **Elements to build awareness of**
 - Issue is important
 - It needs attention
 - It needs funding



Short Term Actions

- **Work with professionals to identify hazards**
- **Get rid of the Accumulations**
 - **Inventory**
 - **Remove chemicals**
 - **Hazardous**
 - **Outdated**
 - **No longer needed**



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Short Term Actions

- For inventory remaining
 - Obtain and Maintain Material Safety Data Sheets
 - Keep 1 set in lab
 - Keep 1 set in office



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Longer Term Goals

- **Develop a chemical management system**
 - Purchase
 - Storage, including labeling
 - Use, including labeling
 - Disposal
 - Emergency Planning – spills, explosions, accidents



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Longer Term Goals

- **Use safer chemicals in smaller quantities**
 - Order min quantities, consistent with use
 - Try to keep only 1 year's worth stock
- **Develop policies that specify what chemicals can enter the system and how they will be handled throughout their lifecycle.**
- **Order “safer” alternatives, packaging, dilutions, kits**
 - Green chemistry
 - Microscale approaches (e.g. spot plates instead of test tubes)



Longer Term Goals

- **Develop and maintain chemical hygiene plan for chemicals**
- **Regularly budget for removals (cradle to grave)**
- **Develop partnerships with others in your community.**



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Schools and Community Partners Working Together

- **Chemical Suppliers**
 - Provide technical assistance
 - Provide chemical management services
- **Waste Handlers**
 - Offer cost-effective waste analysis and handling solutions
- **Fire, Police, and Emergency Response**
 - Learn about chemical risks in schools
 - Assist schools in developing emergency response plans
 - Establish effective communication
- **Colleges and Universities**
 - Help schools assess chemical cleanout, management and disposal issues
 - Offer courses and training in EHS for teachers and school district employees
- **Environment, Health, and Education Agencies**
 - Fund school chemical cleanout and prevention programs
 - Provide technical assistance to schools in conducting chemical inventories and cleanouts



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Schools Face Many Environmental Health and Safety Issues

- **Poor IAQ**
- **Pests/Pesticide Use**
- **Mold**
- **Diesel Bus Fumes**
- **Funding**



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Chemical Hazards



Mold



Lead Paint

Diesel



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Why Plan for Environmental Risks

Schools understand intuitively and by experience:

- Direct impacts on children's health
- Reduced student/staff performance
- Higher energy costs
- Loss of funding tied to attendance
- Possible school closings—both temporary and permanent
- Increased liability

Selling prevention still a challenge, but...

Evidence is emerging that school facility conditions do impact student and staff health, productivity, and performance.



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HealthySEAT Can Help School Systems:

- Identify and address potential environmental, health and safety problems *before* they arise
- Track conditions – and improvements– school by school
- Produce compelling data on facility conditions and needed improvements
- Access EPA recommendations and requirements quickly and efficiently



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Overview

- **Completely voluntary self-audit software tool**
 - No EPA reporting requirements
- **Integrates every EPA issue for schools across 14 separate program offices**
 - Also includes safety and health info. from DoED, CDC, OSHA, NIOSH, CPSC, DOT
- **Fully customizable**
 - Adapts to fit state and district requirements, policies, priorities, & capabilities
- **User audience: *district-level* health, safety, risk, &/or facility managers**
 - Intended to manage information about multiple facilities
- **Developed in close collaboration with states and school districts**



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What Topics Are Covered?

- Chemical management
- Energy efficiency
- Hazardous materials
- Hazardous waste
- Indoor air quality
- Moisture/mold
- Non-hazardous waste
- Outdoor air pollution
- Pest control/Integrated Pest Management
- Portable/relocatable classrooms
- Renovation and construction
- Ultra-violet radiation
- Water (drinking-, waste-, storm-, and -efficiency)
- Health, Safety and Injury Prevention Elements



Start Planning

- Download the software
 - www.epa.gov/schools
- Talk to your State or School District about customizing the program.
- For more information contact:
 - Bob Axelrad (axelrad.bob@epa.gov)
 - Bill Jones (jones.bill@epa.gov)



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In Summary

- **Consider Environmental Health and Safety Issues when “multi-hazard” planning.**
- **Take action to prevent emergencies before they happen.**
- **Know what to do if an incident occurs.**
- **A healthy school environment improves the learning environment.**
- **Build a team to meet your goals.**



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