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Edited: September 15, 2015

## **Chemical Hygiene Plan**

Kenyon College  
Gambier, Ohio

### **1.0 Foreword**

Kenyon College has developed this Chemical Hygiene Plan (CHP) in compliance with the Occupational Safety and Health Administration (OSHA) Laboratory Standard Rules and Regulations. This Laboratory Standard is published as an amendment to 29 CFR 1910, Subpart Z, Section 1910.1450. The title of that amendment is "Occupational Exposure to Hazardous Chemicals in Laboratories" (see Appendix D). OSHA defines a hazardous chemical as a substance for which there is statistically significant evidence, based on at least one scientific study, showing acute or chronic harm may result from exposure to that chemical. At Kenyon College the following have been designated as laboratories for the purpose of applying the Laboratory Standard:

- Department of Art
- Department of Chemistry
- Department of Biology
- Department of Dance and Drama
- Department of Psychology
- Department of Neuroscience

The purpose of the Laboratory Standard is to protect laboratory employees from harm due to chemicals while they are working in a laboratory. In addition to academic and administrative employees who spend a significant amount of their time working or teaching in a laboratory, the Laboratory Standard also includes as "laboratory employees" those office, custodial and maintenance persons who, as part of their duties, regularly spend a significant amount of their working time within a laboratory environment. Students, as laboratory assistants paid by Kenyon College, are also covered by the Laboratory Standard.

Kenyon College, in meeting the requirements of the Laboratory Standard, will keep records of employee exposure to hazardous chemicals, provide employees with training and information regarding chemical and physical hazards (see Appendix A), and access to medical consultation and examination (see Appendix B). Training will include information about material safety data sheets (MSDSs), chemical labels, permissible exposure limits (PEL) or threshold limit values (TLV). Measurement of the concentration of any chemical will be made for which a PEL or TLV may have been exceeded. Where this Laboratory Standard applies, it supersedes the Hazard Communication Standard, 29 CFR 2910.1200 for those laboratories designated above.

For the Kenyon College CHP, the Director of Emergency Management and Environmental Safety is designated as the Chemical Hygiene Officer (CHO). This person acts as the representative for the President of the College who has the ultimate responsibility for chemical safety. The CHO also reports to the Vice President for Finance as that person designated by the President for overseeing any financial implications of the CHP and chemical safety; the CHO also reports to the Provost and the Associate Provost in regard to academic matters of the CHP.

A printed copy of the CHP will be provided to any employee of the laboratories designated above, by the CHO, upon request. Copies will be available from the CHO to any other interested parties. The current version is also available electronically via the internet at [ehs.Kenyon.edu](http://ehs.Kenyon.edu).

As of September 15, 2013 the following persons are identified:

Sean Decatur, President  
Joseph Klessner, Provost  
Mark Kohlman, Chief Business Officer  
Brad Hartlaub, Associate Provost

## The Chemical Hygiene Plan For Kenyon College

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## **The Chemical Hygiene Plan For Kenyon College**

### **2.0. Standard Operating Procedures**

#### **2.1. General Rules**

1. No one should work alone in a laboratory chemical storage area except for photographic darkrooms and in studio art areas. It is expected that there will be more than one person working in a building at any time of the day or night.
2. Contact lenses should not be worn when working in a laboratory or chemical storage area.
3. Appropriate eye protection should be used at all time; see section A3.
4. When working with flammable chemicals, no sources of ignition should be present that could cause fire or explosion in the event of a vapor release or liquid spill.
5. Tip resistant shields should be used whenever an explosion or implosion could occur during a laboratory procedure.
6. During chemical use, employees should be aware of the following:
  - a. Chemical hazards, as determined from Material Safety Data Sheets (MSDS) and other appropriate references.
  - b. Appropriate safeguards for using chemicals, including personal protective equipment (ppe).
  - c. Location and proper use of emergency equipment.
  - d. Proper storage methods for chemicals not currently being used.
  - e. Proper laboratory personal hygiene practices.
  - f. Methods for transporting chemicals within the facility.
  - g. Emergency procedures, evacuation routes, spill cleanup and waste disposal procedures.

## **2.2. Personal Hygiene**

1. Wash promptly whenever a chemical comes into contact with the skin.
2. Avoid inhaling chemicals; do not sniff to identify chemicals.
3. Do not use mouth suction to pipette anything, use a pipette bulb.
4. Wash with soap and water, not solvents, before leaving the laboratory.
5. Do not drink, eat, smoke, or apply cosmetics in the laboratory.
6. Do not bring food, beverage, tobacco, or cosmetics into areas where chemicals are stored or used.

## **2.3. Protective Clothing and Equipment**

1. Eye protection worn when working with chemicals should meet the requirements of the American National Standards Institute (ANSI) Z87.1. A type N face shield large enough to protect the face, neck and ears should be worn when more than 10 milliliters (ml) of a corrosive liquid is used.
2. Gloves made of material known to be resistant to permeation by a given chemical should be tested by air inflation (do not inflate by mouth) for the absence of pin-hole leaks. These should be worn during work with corrosive liquids.
3. Long or short sleeved and long legged clothing is recommended.
4. Gloves resistant to permeation by given chemicals should be worn when working with allergenic, sensitizing or toxic chemicals. Testing for leakages should be done as in 2.
5. Low heeled shoes with fully covering uppers should be worn, avoiding those with open toes and woven materials.
6. When exposure by inhalation is likely to exceed the threshold limits described in MSDSs (or another reference), work should take place under a hood. If fume hood space is not available, a respirator that reduces exposure to below the threshold limit should be used.
7. Waste containers will be labeled as to type and stored in designated areas.
8. Spills must be cleaned immediately with materials specified by the MSDS. Waste disposal of the chemical and cleaning materials must be according to chemical type.

9. Working surfaces and floors need to be cleaned regularly.
10. Chemicals should not be stored in aisles or stairways, on desks or lab benches, on floors or in hallways, or left overnight on shelves over the workbenches.

#### **2.4. Housekeeping**

1. Access to emergency equipment, showers, eyewashes and exits should never be blocked.
2. All chemical containers must be labeled with at least the identity of the contents and the hazards they present to users.
3. All work areas, especially laboratory benches, must be clutter free.
4. All aisles, hallways and stairs must be free of chemicals.
5. Chemicals should be placed in their assigned storage areas at the end of each work day.
6. The contents of unlabeled containers are to be considered waste at the end of the work day and are to be disposed of as such at that time.
7. Wastes must be correctly labeled and stored in appropriate containers.
8. Spills should be cleaned immediately with disposal of the chemical and cleaning materials in the correct waste disposal containers.
9. Working surfaces and floors should be cleaned regularly.
10. No chemicals will be stored in workplace aisles, desks, laboratory benches or floors. No chemicals will be left overnight on shelves above workbenches.

#### **2.5. Prior Approval**

Employees must obtain prior approval to proceed with a laboratory task from the employer or designee whenever:

1. A new laboratory procedure or test is to be performed.
2. Toxic limit concentrations could be exceeded or other harm is possible.
3. A change in procedure or test is need. "Change is procedure or test" is defines as

follows:

- a. A 10% or greater increase or decrease in the amount of one or more chemicals used.
  - b. A substitution or deletion of any of the chemicals in a procedure.
  - c. A change in other conditions under which the procedure is to be conducted.
4. Failure of equipment or safeguards such as fume hoods or clamped apparatus occurs.
  5. Unexpected results are apparent.
  6. Members of the laboratory staff become ill, suspect that they or others have been exposed or suspect failure of safeguards.

## **2.6. Spills and Accidents**

Spills of toxic or flammable substances or accidents involving any hazardous chemical should be resolved immediately according to the chemical's MSDS. Large spills that cannot be easily handled by laboratory employees should immediately be reported to the Kenyon Office of Security and Safety to be handled according to Kenyon College's Emergency Response Plan (see Appendix C).

## **3.0. Specific Safety Procedures**

All laboratory procedures must contain a written description of safety practices incorporating the applicable precautions described in this section. Employees should read and understand these practices before commencing a procedure.

### **3.1. Procedures for Toxic Chemicals**

The MSDSs for many of the chemicals used in the laboratory will state recommended limits or OSHA mandated limits or both, as guidelines for exposure. Typical limits are threshold limit values (TLV), permissible exposure limits (PEL) and action levels. When these limits are stated, they will be used to assist the chemical hygiene officer in determining the safety precautions, control measures and safety apparel that apply when working with toxic chemicals.

1. When a TLV or PEL value is less than 50 parts per million (ppm) or 100 milligrams per cubic meter ( $\text{mg}/\text{m}^3$ ), the user must work in a fume hood, glove box, vacuum line or similar device that is equipped with appropriate traps and/or scrubbers. No work with the chemical should be done in the absence of one of these.

2. If a TLV, PEL or comparable value is not available, the animal or human median inhalation lethal concentration information,  $LC_{50}$  will be checked. A value less than 200 ppm or 2000 mg/m<sup>3</sup> (when administered continuously for one hour or less) will require the use of a fume hood, glove box, vacuum line or similar device that is equipped with appropriate traps and/or scrubbers. If none is available, the chemical will not be used.

3. Toxic substances that may produce vapor pressures that exceed air concentration limits must be used in a fume hood, glove box, vacuum line or similar device that is equipped with appropriate traps and/or scrubbers. The chemical cannot be used without one of the above.

### 3.2. Procedures for Flammable Chemicals

The flammability of a chemical is determined by its flash point, the lowest temperature at which an ignition source can cause the chemical to ignite momentarily under certain controlled condition.

1. Chemicals with a flash point below 200<sup>0</sup>F (93.3<sup>0</sup>C) will be considered fire hazards.
2. OSHA standards and the National Fire Protection Association (NFPA) guidelines for flammability apply to the use of flammable chemicals in the laboratory. In all work with fire hazard chemicals, the requirements of 29CFR, subparts H and L; NFPA Manual 30, Flammable and Combustible Liquids Code and NFPA Manual 45, Fire Protection for Laboratories Using Chemicals will apply.
3. Fire hazard chemicals should be stored in flammable solvent storage areas or in cabinets designed for flammable materials.
4. Fire hazard chemicals should be used only in vented hoods and away from sources of ignition.

Note: It is recognized that fume hoods are not currently available for all areas in the Department of Art where fire hazard chemicals are used and that certain organic liquids such as acetone and other solvents may occasionally need to be used at a sink or on a work bench in other academic departments.

### 3.3. Procedures for Reactive Chemicals

The most complete and reliable reference for chemical reactivity is the current edition of *Handbook of Reactive Chemical Hazards* by L. Bretherick, published by Butterworths. Reactivity information may be given in manufacturers' MSDSs and on labels. Guidelines for determining reactive chemicals can be found in regulations promulgated by the Department of Transportation (DOT) in 49CFR and by the Environmental Protection Agency (EPA) in 40CFR. Also see NFPA Manual 325M, Fire Hazard Properties of

Flammable Liquids, Gases, Volatile Solids; Manual 49, Hazardous Chemicals Data; and Manual 491M, Manual of Hazardous Chemical Reactions.

1. A reactive chemical is one that:

- a. Is described as such in Bretherick or the MSDS.
- b. Is ranked by the NFPA as 3 or 4 for reactivity.
- c. Is identified by the DOT as:

- An oxidizer
- An organic peroxide
- An explosive, class A, B or C

- d. Fits the EPA definition of reactive in 40 CFR 261.23.
- e. Fits the OSHA definition of unstable in 29 CFR 1910.1450.
- f. Is known or found to be reactive with other substances.

2. Reactive chemicals must be handled with safety precautions, including segregation in storage and avoidance of mixtures with all other chemicals without prior approval and appropriate ppe.

### **3.4. Procedures for Corrosive Chemicals and Contact Hazard Chemicals**

Corrosive, allergenic and sensitizer information is given in manufacturer MSDSs and on container labels. Lists of some of the corrosives can be found in other OSHA standards and in DOT regulations in 49CFR and in EPA regulations in 40CFR.

1. A corrosive chemical is one that:

- a. Fits the OSHA definition of corrosive in Appendix A of 29 CFR 1910.1200.
- b. Fits the EPA definition of corrosive in 40CFR261.22 (has a pH greater than 12 or less than 2.5).
- c. Is known or found to be corrosive to living tissue.

2. A contact hazard chemical is an allergen or sensitizer that:

- a. Is so identified or described in the MSDS or on the label.

- b. Is so identified or described in the medical or industrial hygiene literature.
- c. Is known or found to be an allergen or sensitizer

3. Corrosive chemical handling precautions include wearing safety goggles and/or face shield, permeation tested gloves (checked for holes).

#### **4.0. Control Measures and Equipment**

Chemical safety is achieved by continual awareness of chemical hazards and by keeping the chemical under control by using precautions, including engineering safeguards such as hoods. Laboratory personnel should be familiar with the precautions, including the use of engineering and other safeguards. Laboratory supervisors should be alert to the malfunction of engineering and other safeguards. All engineering safeguards and controls must be properly maintained, inspected on a regular basis and never overloaded beyond their design limits.

#### **4.1. Ventilation**

1. Laboratory ventilation should not be less than eight air changes per hour (calculated). This flow is not necessarily sufficient to prevent accumulation of chemical vapors. Work with toxic chemicals that have low air concentration limits or that have high vapor pressures should always be done in a hood.
2. Fume hoods should provide 70 to 90 linear feet per minute of air flow.
3. Laboratory employee understanding and compliance of the following is necessary:
  - a. Fume hoods are a safety backup for condensers, traps or other devices that collect vapors and fumes. Hoods should not be used to dispose of chemicals by evaporation unless vapors are trapped and recovered for waste disposal.
  - b. Apparatus used inside the hood should be placed on the floor of the hood at least six inches away from the front edge.
  - c. Fume hood sashes should be lowered at all times except when adjustment of the apparatus inside is required.
  - d. The hood fan should be operating whenever a chemical is inside the hood even when there is no work in progress.
  - e. Employees must be aware of power failure or hood failure procedures and must be able to call maintenance repair personnel if necessary.
  - f. Hood vent ducts and fans should be inspected frequently to insure that they are

clean and clear of obstructions.

g. Chemicals, apparatus or other materials should never be stored inside a hood.

#### **4.2. Flammable Liquid Storage**

1. Fire hazard chemicals (see paragraph B2) in quantities greater than 1000 ml should be kept in safety can designed for such storage. Manufacturer recommendations should be carefully followed.

a. The spring loaded closure should never be disabled.

b. The flame arrester screen must be maintained in place and replaced if punctured or damaged.

Note: Fire hazard chemicals are often packaged in glass containers. Use caution in storing them in such containers.

2. Cabinets (or rooms) designed for the storage of flammable materials should be maintained according to manufacturers' instructions, including electrical grounding. Additional safety practices include the following:

a. Only compatible materials should be stored in the cabinets.

b. Paper, cardboard and other combustible materials should not be stored in cabinets.

c. Quantity limits for cabinets should not be exceeded.

#### **4.3. Eyewash Fountains and Safety Showers**

1. All laboratories should be equipped with eyewashes and safety showers. They must be located so they can be reached from any point in the laboratory.

2. Eyewash fountains and safety showers must be checked by measuring the water flow at selected intervals. Prompt repair is required for any equipment that does not meet the water flow requirements.

3. Access to eyewash fountains and safety showers must not be restricted in any way.

#### **4.4. Respirators**

1. Employees should wear respirators whenever it is possible that engineering controls or work practices could become or are ineffective and those employees might be exposed to vapor or particulate concentrations greater than the PEL, action level, TVL or similar limit (whichever is lowest).

2. The requirements of 29CFR2910.134 should be followed, including in particular:
  - a. Written standard operating procedures governing the selection and use of respirators.
  - b. All employees who are likely to need to use respirators must be trained in their proper use, inspection and maintenance (see NIOSH Guide to Industrial Respiratory Protection, US Department of Health and Human Services Publication No. 87-0116, NIOSH, Cincinnati, 1987, for details).

#### **4.5. Vapor Detection**

Odor should not be used as a means of determining inhalation exposure limits. Whenever there is reason to suspect that a toxic chemical inhalation limit might be exceeded, whether or not a suspicious odor is noticed, a supervisor must be notified. Laboratory workers should wear a respirator suitable for protection against the suspect chemical until measurements of the concentration of the suspect vapor in the air show that the limit is not exceeded. Under this circumstance and if there is no reason to anticipate an increase in the concentration of the chemical; and if the supervisor approves, the respirator can be removed and the work may continue.

#### **4.6. Fire Extinguishers**

Fire extinguishers should be provided within 30 feet of paths of travel. Access must be maintained and the location should be conspicuously marked. The fire extinguisher and type must be selected for the appropriate hazards.

#### **4.7. Fire Alarms/Smoke or Heat Detectors**

Fire alarms must be provided along normal paths of travel, along exit routes and should be conspicuously marked. Smoke or heat detectors should be installed. Both alarms and detectors must be tested at regular intervals.

#### **5.0. Procedures for Carcinogens, Reproductive Toxins, Substances that have a High Degree of acute Toxicity and Chemicals of Unknown Toxicity**

Procedures for laboratory work with greater than 10 mg of any carcinogen, reproductive toxin, substance that has a high degree of acute toxicity or a chemical whose toxic properties are unknown will be bound by the following:

##### **5.1. The following definitions will apply:**

1. Select carcinogen: Any substance defined as such in 29 CFR 1910.1450 and any other substance described as such in the applicable MSDS.

2. Reproductive toxin: Any substance described as such in the applicable MSDS (other definitions may apply, for example: Any substance identified as a reproductive toxin by the Oak Ridge Toxicology Information Resource Center, 615-576-1746, or for teratogens: Any substance identified as such in Thomas H. Shepherd, *Catalog of Teratogenic Agents*, 6th ed., Johns Hopkins Press, 1989).

3. Substance with a high degree of acute toxicity: Any substance for which the LD<sub>50</sub> data described in the MSDS causes the substance to be classified as a "highly toxic chemical" as defined in ANSI Z129.1.

4. Chemical whose toxic properties are unknown: A chemical for which there is no known statistically significant study conducted in accordance with established scientific principles that establish its toxicity.

5. For the purposes of the CHP, chemicals in these four categories will be called "inimical."

6. Designated area: A hood, glove box, portion of a laboratory or an entire laboratory room designated as the only area where work with quantities of the inimical chemicals in excess of the specific limit shall be conducted.

**5.2. Designated areas shall be posted and their boundaries clearly marked. Only those persons trained to work with inimical chemicals will work with those chemicals in a designated area. All such persons will:**

1. Use the smallest amount of chemical that is consistent with the requirements of the work to be done.
2. Use high efficiency particulate air (HEPA) filters or high efficiency scrubber systems to protect vacuum lines and pumps.
3. Store inimical chemicals or remove them from storage.
4. Decontaminate a designated are when work is completed.
5. Prepare wastes from work with inimical chemicals for waste disposal in accordance with specific disposal procedures consistent with the Resource Conservation and Recovery Act (RCRA) and as designated by Kenyon's Director of Environmental Health and Safety.

**5.3. All inimical chemicals will be stored in enclosed spaces with a slight negative pressure compared to that of the surrounding area, if such space is available.**

**5.4. Jewelry should not be worn during work within the designated area since it is difficult**

to decontaminate.

**5.5. Long sleeved or frequently laundered clothing and gloves known to resist permeation by the chemicals being used should be worn when working in designated areas.**

1. The Laboratory Standard requires that records of air concentration monitoring results, exposure assessments, medical consultations and examinations be maintained for at least 30 years and that they be accessible to employees or their representatives.
2. It is desirable to develop a system that retains documents related to distribution and maintenance of MSDSs, to safety training of employees and to employee suggestions. These documents should possibly be retained for the lifetime of the institution. An example might be use of an MSDS sign off record for each hazardous chemical used or handled by employees, each employee certifying by dated signature that the MSDS was read and understood (not OSHA required at this time).
3. It is often desirable to keep records developed internally that document employee exposure complaints and suspected exposures, regardless of the outcome of an exposure assessment. Other incidents also might be documented for future reference.
  - a. Safety suggestions from employees should be kept to use in making revisions to safety programs. Those not feasible may be valid at a later date.
  - b. Near miss reports should be written when employees are involved in or witness events that could have caused harm but did not. Such reports are useful in making changes in procedures intended to prevent future occurrences.
  - c. Repair and maintenance records including suggested corrective actions and condition of equipment can be applied to decisions concerning maintenance procedures and equipment replacement.
  - d. Employee complaint records are useful during investigations.
4. Other EPA, federal and state agency required reports must be maintained.

**6.0 Records and Recordkeeping**

This section reviews the value of documenting an employer's compliance with the Laboratory Standard which is required by 29 CFR 1910.20. This information is general; it does not include the details necessary for compliance.

1. The Laboratory Standard requires that records of air concentration monitoring results, exposure assessments, medical consultations and examinations be maintained for at least 30 years and that they be accessible to employees or their representatives.
2. It is desirable to develop a system that retains documents related to distribution and

maintenance of MSDSs, to the safety training of employees and to significant employee suggestions for many years, perhaps for the lifetime of the institution.

3. In addition to required records, it is desirable to keep records developed internally that document employee exposure complaints and suspected exposures, regardless of the outcome of an exposure assessment. Other incidents also might be documented for future reference. Examples include:

- a. All major safety suggestions from employees, including those that are not appropriate at the present, but may be useful in the future.
- b. Near-miss reports from employees who are participants or witnesses to events that could have caused harm, but did not. These are useful in developing changes in procedures for accident prevention.
- c. Repair and maintenance records for control systems, indicating quality of equipment maintenance and replacement needs.
- d. Employee complaints, investigations and outcomes. These can provide insight into defect and malfunction problems for the future even if nothing is done when the complaint occurs.

4. Records required by the EPA and other Federal and state agencies dealing with adverse effects of chemical exposure as in sections 8(c) and 8(e) of the Toxic Substances Control Act (40CFR716 and 717) will be maintained.

## **7.0. Program Update and Evaluation of Effectiveness**

Kenyon's Chemical Hygiene Program will be updated and evaluated on an as need basis or at least annually. Changes will be made by the Director of Emergency Management and Environmental Safety upon the recommendation of members of the four departments whose laboratories fall under the requirements of the OSHA Laboratory Standard.

## **8.0 Appendices**

### **8.1 Employee Information and Training**

OSHA does not mandate the details of the instruction method for providing information or training to employees. A formal classroom session, informal group and individual discussions, posted notices, handout booklets and materials, commercially prepared programs or any combination of the above, supplemented with details for individual situations can be used. Training should supply information in such a way that employees can demonstrate an understanding of the hazards, protection and clean-up procedures necessary to work safely within their work environment(s).

Employees who have had instruction and/or training for similar work that they will be doing here may feel training at Kenyon is not needed. If so, an evaluation by the supervisor for the employee's work area should be conducted to determine understanding of the issues above. If so demonstrated, the employee shall provide the Director of Emergency Management and Environmental Safety with the following information to be entered into the Kenyon training database:

Employer  
Location  
Date of training.

A. The employer will provide all employees, who use or work in areas where hazardous chemicals are present, with information and training concerning the hazards of those chemicals.

B. Information and training must be provided after work is assigned and before work with chemicals begins.

C. Information must include a general description and location of the following:

C1. The Laboratory Standard.

C2. The Chemical Hygiene Plan.

C3. PELs, action levels and other recommended exposure limits for hazardous chemicals used at Kenyon.

C4. Signs and symptoms associated with exposures to hazardous chemicals.

C5. MSDSs and other reference materials.

D. Training shall include:

D1. Methods and observations that may be used to detect the presence or release of a hazardous chemical.

D2. Hazards associated with the chemicals used at Kenyon.

D3. Ways employees can protect themselves from work hazards:

1. Work procedures and practices

2. Protective equipment

3. Emergency procedures.

## 8.2 Exposure Assessments, Medical Consultations and Physical Examinations

### A. SUSPECTED EXPOSURES TO TOXIC SUBSTANCES

Whenever suspected employee exposure to hazardous chemicals occurs to the extent that harm may have been done to the employee, a medical consultation is in order. If the consultation determines that a medical examination should be conducted, it will be done at no cost or loss of workday time to the employee.

#### A1. Criteria for Reasonable Suspicion of Exposure to Hazardous Chemicals:

1. It is a Kenyon policy to promptly investigate all reported incidents in which there is a possibility of employee overexposure.

2. Events that might constitute overexposure include:

a. An uncontrolled leak, spill or other rapid release.

b. Direct skin or eye contact.

c. Display of any combination of the following symptoms: headache, rash, nausea, coughing, tearing, irritation of eyes, irritation of nose or throat, dizziness, loss of motor dexterity or judgment, etc. Also, any of the following:

\*Symptoms disappear when the person is removed from the exposure area.

\*Symptoms reappear soon after the person returns to work with the same chemicals.

\* Two or more persons working in the same area exhibiting similar symptoms.

#### A2. Exposures

All complaints and their disposition are to be documented. If no action is taken, the reason(s) for that decision should be documented. If a decision to investigate further is made, a formal exposure assessment will be initiated.

#### A3. Exposure Assessment

In cases of emergency, exposure assessments are conducted after the victim has been treated.

Note: It is not the purpose of an exposure assessment to assess blame. The purpose is to determine if there was or was not a harmful exposure to an employee or employees and, if so, to identify the chemical(s) involved. This is a fact finding procedure. No conclusions or recommendations for changes will be made.

1. These actions constitute an exposure assessment:
  - a. Document date, location and names of the victim(s) and the person who reported the incident.
  - b. Interview the individuals listed above, recording essential information about the circumstances of the event.
    - \* The suspected chemical(s).
    - \* Other chemicals used by the victim(s).
    - \* All chemicals in use by others in the area.
    - \* Other chemicals stored in the area.
    - \* Symptoms exhibited or described by the victim(s).
    - \* Ways these symptoms compare to those listed in the MSDSs for each of the identified chemicals.
    - \* Control measures, such as ppe and hoods, in use and if they were being used according to manufacturer recommendations and laboratory rules.
    - \* Air sampling and monitoring devices in operation during or just after the incident. Readings taken from these instruments and comparisons are made with available standards.
2. Monitor or sample the air in the area for suspect chemicals.
3. Compare each victim's symptoms with symptoms described in pertinent scientific literature, if available.
4. Determine if the present control measures and safety procedures are adequate.

## B. MEDICAL CONSULTATION AND EXAMINATION

Details of medical consultations and examinations are determined by the physician. The purpose of a medical consultation is to determine if a medical examination is warranted. If the results of an exposure assessment indicate that an overexposure to a hazardous chemical is likely, the employee(s) involved should have medical consultation from, or under supervision of, a physician. If the

physician feels an examination is warranted, it should be conducted by a physician who is experienced in the treatment of victims of chemical exposure. The following provisions apply to medical consultations and examinations:

1. All employees who work with hazardous chemicals must be provided an opportunity to receive medical consultation and examination when:
  - a. An employee develops symptoms associated with exposure to a hazardous chemical that the employee may have been exposed to in the workplace.
  - b. Monitoring data indicates there could have been exposure above the action level or PEL for a chemical that has an established standard.
  - c. There is a spill, leak or other uncontrolled release of a hazardous chemical.
2. The physician should receive the following information:
  - a. Identity of the chemical(s) evident in the exposure.
  - b. Exposure conditions.
  - c. Symptoms the victim is experiencing.
3. The physician should supply the employer with a written report including the following:
  - a. Recommendations for follow-up, if any.
  - b. Record of consultation results, examination results (if conducted) and any tests conducted.
  - c. Conclusions concerning any other medical condition noted, that could place the employee at a higher exposure risk than normal.
  - d. A statement that the employee has been informed both of the results of the consultation or examination and of any medical condition that may require further examination, testing or treatment.
4. Written statements listed above should not reveal conditions unrelated to an exposure.

#### B1. Documentation

All memos, notes and reports related to a complaint of actual or possible exposure to hazardous chemicals are to be maintained as a part of the record.

## B2. Notifications

Employees shall be notified of the results of any medical consultation or examination concerning any medical condition that is or might be the result of overexposure to a hazardous chemical.

### **8.3 The Kenyon Emergency Response Plan**

The essence of a plan to handle emergencies is summarized in the acronym "NEAR: Notify, Evacuate, Assemble, Report." Usually the "who notifies" is a person present when the incident happens. Depending upon the severity and complexity of the incident, that person may or may not be able to evaluate and determine the actions to be taken. For that reason, it will usually be best to notify a predetermined person(s) for each laboratory situation, a person capable of evaluating the situation and determining the appropriate action.

If the notified person determines that evacuation is in order, evacuees should assemble in predetermined locations, and one person at each location should report the names of everyone at that location to the notified person after making certain that the list of those present is accurate.

Obviously, an emergency procedure plan requires planning by supervisory personnel and training of employees before it is needed. In the event of an emergency:

#### ***Primary contact notified is the Office of Security and Safety--***

Emergency Number PBX 5555  
Information Number PBX 5109 or 740-427-5109  
PBX Operator 0.

#### ***Secondary contact notified is the Fire Department--***

Emergency Number 911

#### ***Either the primary or secondary contact will notify the following people as appropriate:***

Dudley Thomas, Environmental Health and Safety Specialist,  
PBX 5358

Greg Widener, Superintendent of Buildings and Grounds,  
PBX 5828 or contact Security office to call at home

Coordinator for Knox County Local Emergency Planning Commission, 740-393-6772 or local Sherriff's office for contact after hours 740-397-3333

Portions of this Chemical Hygiene Plan have been adapted with permission from Young, J.A.; Kingly, W.K.; Wahl, Jr., G.H. "Developing a Chemical Hygiene Plan;" American Chemical Society: Washington, DC, 1990.

#### **8.4 Occupational Exposure to Hazardous Chemicals in Laboratories**

The printed version contains the text of Fact sheet No. OSHA 95-33 and 29CFR1910.1450.