

APPENDIX IV

CHEMICAL INVENTORY FORM

Or use our Chemical Inventory Software a copy is available from Environmental Health and Safety (4091)
Software is "Flinn combined MSDS/ChemInventory"

Laboratory: _____ Laboratory Supervisor: _____

Completed by: _____ Date: _____

Chemical/Trade Name	CAS #	Quantity (e.g. 7 gallons)

APPENDIX V

LABORATORY INSPECTION GUIDELINES AND FORM

The following guide has been developed to assist you in your scheduled safety surveillance of laboratories and departments under your auspices as lab supervisor. This guide is by no means all encompassing, however information contained after each item should assist you in determining whether your area may be in full, partial or non-compliance.

Keep in mind that all Federal, State and University rules, recommendations and regulations determine the compliance of our area concerning OSHA, EPA, NIH, CDC, and DOT. If you have any specific questions on the information below, please contact Environmental Health and Safety (372-4091).

1. Entrances, Exits, Hallways and Stairways - All entrances, exits, hallways and stairways must be clear and unobstructed.
2. Showers/Eye Wash Operative - Monthly inspections are required. Any area which deals with corrosive, flammable or otherwise hazardous material is required to have immediate access to eyewash and drench shower facilities. All showers and eye wash equipment must be in full operational order and unobstructed. Eye wash bottles are not adequate equipment.
3. Personal Protective Equipment - Personal Protective Equipment such as goggles, masks, gloves and cover gowns must be readily available and not worn outside the immediate work areas. Lab coats and appropriate shoes shall be worn to avoid any contact with harmful materials. Respirators shall be used when applicable. Evidence of respirator training and certification must be readily available.
4. Fire Extinguisher/Inspection and Location - All fire extinguishers must be inspected annually. Extinguishers must be properly mounted, unobstructed and be properly labeled for the intended use. Training classes are offered through EH & S -4091).
5. Pressurized Cylinders - All cylinders must be stored in proper locations. All cylinders must be secured in an upright position and properly restrained to prevent falling. Containers must be labeled for contents and usage. Maximum number of cylinders of a flammable gas shall be not more than 3 (10" x 50") per 500 square feet in an unsprinkled space or not more than 6 (10" x 50") in a sprinkled space of 500 square feet. Liquefied gas cylinders in laboratory work areas shall not exceed 3 cylinders (9" x 30") in a sprinkled space or exceed 2 cylinders (9" x 30") in an unsprinkled space.
6. Room Use Identification - All access doors must be marked when rooms or areas are being used for chemical, biological or radioactive purposes as outlined in the AAMU

Chemical Hygiene Plan. All doors must remain closed and the vision panel must remain unobstructed. Unattended labs shall be locked at all times.

7. UL Electrical Equipment and Cords - Only Underwriters Laboratories approved equipment and cords are authorized for use. Only UL listed multiple outlet strips equipped with 15 AMP circuit breakers are approved.
8. Fume Hood Operation - Face Velocities should be between 80 and 150 FPM at the working sash height with an optimum level of 100 FPM. The sash should never be higher than 12 inches except **when accessing equipment**. Hoods should not be located in high traffic areas or under air supply vents. The hood must have user spill protection and cup sinks must have spill guards.
9. Biological Safety Cabinets - Certification is required annually or any time the hood is moved or has had maintenance performed. Cabinets must not be located near high traffic areas or air supply ducts.
10. Hazardous Chemicals - All chemicals must be appropriately labeled and shall not be placed near or over floor drains. Flammable liquids must be stored in appropriate containers. There should be no more than 5 gallons of solvents or Class IA or IB flammables out in the lab per 100 sq. ft. No more than 10 gallons should be in specific storage cabinets per 100 sq. ft. For larger storage capacities and long term storage of flammable and solvents and approved storage area should be used. For more information consult to Environmental Health and Safety.
11. Hazardous Waste Disposal - Hazardous waste training is required for all employees who handle hazardous material. The Office of Environmental Health and Safety gives training. A certification of training must be posted in laboratories. Contact EH&S for the time and date of classes.
12. Equipment and Utility Labeling - Refrigerators, ice machines and microwaves must be labeled for intended use. Food, personal medication and hazardous materials shall not be housed in the same refrigerator. All utility and plumbing lines need to be labeled and indicate the product contained; i.e., gas, water, etc.
13. Location of Cut-off Valves/Circuit Breakers - All cut off valves and breakers must be properly labeled.
14. General Safety (Dress, Eating, Smoking, etc.) - Eating, drinking, smoking and applying cosmetics is not permitted in a wet lab. Lab personnel shall not wear loose clothing (e.g. saris, dangling neckties, overly large or ragged lab coats), skimpy clothing (e.g. shorts and/or halter-tops), torn clothing, or unrestrained long hair. Perforated shoes, sandals, or cloth sneakers are not to be worn in labs.

15. Use of Flame and Heat - No heat generating devices should be left unattended.
16. Ventilation - Airflow in most labs should be "negative" with respect to the corridor. Laboratory doors shall be kept closed when laboratory procedures are in progress. Volatile hazardous materials shall not be used on the open bench top.
17. Housekeeping/Drains Flushed - All unnecessary material, boxes, and containers must be disposed of in the appropriate manner. All drains, including floor drains and cup sinks should be flushed with water on a weekly basis to eliminate sewer odors. Proper housekeeping must be maintained to provide adequate clearance of sprinkler systems and emergency equipment.
18. Sharps (Glass, Scalpel, Blades, Syringes, Etc.) - All sharps, needles and glass must be disposed of in an approved, labeled container. Glass containers and other potentially sharp objects shall not be disposed of in common office refuse. Containers must not be overfilled and must be labeled and sealed for proper handling and disposal.
19. Emergency lighting - Where necessary, emergency lighting units shall be properly mounted and unobstructed. If emergency lighting exists, it should be checked periodically to ensure it is functional.
20. Emergency Plans/Posted Numbers - All emergency and contingency plans and evacuation routes shall be clearly posted in conspicuous places. A list of emergency numbers and contacts must be kept updated and posted along side the emergency plans.
21. Safety Manuals - Manuals must be current and readily available for all employees.
22. Accidents Reported/Investigated - All accidents must be reported to the immediate supervisor for the completion of the appropriate form. File copies of reported incidents and accidents must be on hand, as well as the action taken to alleviate the safety hazard in the future.
23. Safety Training - This area is designated for lab safety training which is required by law.

Acronyms

CDC	Center for Disease Control
DOT	Department of Transportation
FPM	Feet Per Minute
MSDS	Material Safety Data Sheets
OSHA	Occupational Safety and Health Administration
EPA	Environmental Protection Agency
EH&S	Environmental Health and Safety
NIH	National Institutes of Health
RSO	Radiation Safety Officer

LABORATORY SELF INSPECTION FORM

Department: _____ Building: _____ Room Number: _____

Department Safety Officer: _____ Inspector: _____

Lab Supervisor: _____ Inspection Date: _____

Chairman: _____ Re-inspection Due: _____

S=Satisfactory; U=Unsatisfactory

Item	S	U	Comment	Corrective Action Taken
1. Entrances, exits, hallways, stairways				
2. Showers/eye wash operative				
3. Personal protective equipment				
4. Fire extinguishers/inspection & location				
5. Pressurized cylinders: storage/usage label				
6. Room use identification/labeling				
7. UL Electrical equipment & cords				
8. Fume hood operation				
9. Biological safety cabinets				
Certification				
Use				
10. Hazardous Chemicals				
Labeling				
Storage/amount/location				
Handling				

APPENDIX V (cont'd)

Laboratory Self Inspection Form

Item	S	U	Comments	Corrective Action Taken
11. Hazardous Waste Disposal				
Training certificate				
Labeling				
Storage				
Disposal				
12. Equipment and utility labeling				
13. Location of cut-off valves/circuit breakers				
14. General safety (dress, eating, smoking, etc.)				
15. Use of flame and heat				
16. Ventilation				
17. Housekeeping/drains flushed				
18. Sharps (glass, scalpel, blades, syringe, etc.)				
19. Emergency lighting				
20. Emergency plan/posted numbers				
21. Safety manuals				
22. Accidents reported/investigated				
23. Safety training: Date:				
Subject:				

Laboratory safety questions? Call Environmental Health and Safety at 372-4091, for information and referrals.
Send a copy of the "Laboratory Self Inspection Form" to Environmental Health and Safety, Cartr Hall 208A.

APPENDIX VI

GLOVE SELECTION GUIDANCE

Resistant Properties of Selected Materials by Chemical Class

Chemicals	Butyl	CPE	Viton™/ neoprene	Natural rubber	Neoprene	Nitrile + PVC	Nitrile	PE	PVA	PVC	Viton	Butyl/ neoprene
Acids, carboxylic and aliphatic Unsubstituted Polybasic	R	r	r	**	rr	** rr	rr rr	N N rr	** n	** rr	**	R
Aldehydes Aliphatic and alicyclic Aromatic and heterocyclic	RR rr	NN	r n	** nn	NN nn	nn n	NN nn	** N N	NN rr	NN N	**	r r
Amides	rr			**	nn		nn	nn			nn	
Amines, aliphatic and alicyclic Primary Secondary Tertiary Polyamine	** ** ** **	** **	n n	NN NN ** NN	** nn ** **	 ** nn	rr ** **		nn ** ** **	** NN ** NN	** nn rr rr	n
Cyanides					r							
Esters, carboxylic Formats			n							n		n

Hydrocarbons Aliphatic and alicyclic Aromatic	N **	r rr	r r	NN NN	** NN	** NN	** NN	** NN	** NN	** NN	** NN	NN NN	RR RR	r r
Hydroxyl compounds Aliphatic and alicyclic Primary Secondary Tertiary Polyols Aromatic	RR rr r r **	rr rr	rr r ** r	nn ** ** rr **	nn ** rr rr **	** rr rr rr **	** rr rr rr **	** rr rr rr **	** rr rr rr **	** rr rr rr **	** rr rr rr **	** rr rr rr **	rr rr rr rr	** r ** r
Inorganic acids	**	**	rr	**	**	**	**	**	**	**	**	**	rr	**
Inorganic base	r	r		RR	RR	RR	RR	RR	RR	RR	RR	RR	rr	r
Inorganic gases	**	r	n	n	n	r	r	r	r	r	r	r	rr	**
Inorganic salts**	r		n	**	**	r	r	r	r	r	r	r	rr	**
Isocyanates				NN	NN	n	n	n	n	n	n	n	rr	
Ketones, aliphatic	**	NN	n	NN	NN	NN	NN	NN	NN	NN	NN	NN	NN	**
Nitriles, aliphatic	rr			NN	NN	**	**	**	**	**	**	NN	rr	
Nitro compounds Unsubstituted	rr	r		NN	NN	**	**	**	**	**	**	NN	rr	
Organo- phosphorous compounds			r										**	r
Peroxides				r	r	r	r	r	r	r	r	r	rr	

Resistance to Chemicals of Common Glove Materials
(E=Excellent, G=Good, F=Fair, P=Poor)

Chemical	Natural Rubber	Neoprene	Nitrile	Vinyl
Acetaldehyde	G	G	E	G
Acetic acid	E	E	E	E
Acetone	G	G	G	F
Acrylonitrile	P	G	-	F
Ammonium hydroxide	G	E	E	E
Aniline	F	G	E	G
Benzaldehyde	F	F	E	G
Benzene	P	F	G	F
Benzyl chloride	F	P	G	P
Bromine	G	G	-	G
Butane	P	E	-	P
Calcium hypochlorite	P	G	G	G
Carbon disulfide	P	P	G	F
Carbon tetrachloride	P	F	G	F
Chlorine	G	G	-	G
Chloroacetone	F	E	-	P
Chloroform	P	F	G	P
Chromic Acid	P	F	F	E
Cyclohexane	F	E	-	P
Dibenzylether	F	G	-	P
Dibutylphthalate	F	G	-	P
Diethanolamine	F	E	-	E
Diethyl ether	F	G	E	P
Dimethyl sulfoxide	-	-	-	-
Ethyl acetate	F	G	G	F
Ethylene dichloride	P	F	G	P
Ethylene glycol	G	G	E	E
Ethylene trichloride	P	P	-	P
Flourine	G	G	-	G
Formaldehyde	G	E	E	E
Formic acid	G	E	E	E
Glycerol	G	G	E	E
Hexammne	P	E	-	P
Hydrobromic acid (40%)	G	E	-	E
Hydrochloric acid (conc)	G	G	G	E
Hydrofluoric acid (30%)	G	G	G	E
Hydrogen peroxide	G	G	G	E
Iodine	G	G	-	G
Methylamine	G	G	E	E
Methyl cellosolve	F	E	-	P
Methyl chloride	P	E	-	P
Methyl ethyl ketone	F	G	G	P
Methylene chloride	F	F	G	F
Monoethanolamine	F	E	-	E
Morpholine	F	E	-	E
Naphthalene	G	G	E	G
Nitic acid (conc)	P	P	P	G
Perchloric acid	F	G	F	E
Phenol	G	E	-	E
Phosphoric acid	G	E	-	E
Potassium hydroxide (sat)	G	G	G	E
Propylene dichloride	P	F	-	P
Sodium hydroxide	G	G	G	E
Sodium hypochlorite	G	P	F	G
Sulfuric acid (conc)	G	G	F	G
Toluene	P	F	G	F
Trichloroethylene	P	F	G	F

Tricresyl phosphate	P	F	-	F
Triethanolamine	F	E	E	E
Trinitrotoluene	P	E	-	P

Aromatic and halogenated hydrocarbons will attack all types of natural and synthetic glove materials. Should swelling occur, the user should change to fresh gloves and allow the swollen gloves to dry and return to normal.

No data on the resistance to dimethyl sulfoxide of natural rubber, neoprene, nitrile rubber, or vinyl materials are available; the manufacturer of the substance recommends the use of butyl rubber gloves.

Taken from Prudent Practices for Handling Hazardous Chemicals in Laboratories, 1981.

APPENDIX VII

EXAMPLES OF INCOMPATIBLE CHEMICALS

From: "Safety in Academic Chemistry Laboratories", American Chemical Society

Chemical	Is Incompatible With
Acetic acid	Chromic acid, nitric acid, hydroxyl compounds, ethylene glycol, perchloric acid, peroxides, permanganates
Acetylene	Chlorine, bromine, copper, fluorine, silver, mercury
Acetone	Concentrated nitric and sulfuric acid mixtures
Alkali and alkaline earth metals (such as powdered aluminum or magnesium, calcium, lithium, sodium, potassium)	Water, carbon tetrachloride or other chlorinated hydrocarbons, carbon dioxide, halogens
Ammonia (anhydrous)	Mercury (in manometers, for example), chlorine, calcium hypochlorite, iodine, bromine, hydrofluoric acid (anhydrous)
Ammonium nitrate	Acids, powdered metals, flammable liquids, chlorates, nitrites, sulfur, finely divided organic combustible materials
Aniline	Nitric acid, hydrogen peroxide
Arsenical materials	Any reducing agent
Azides	Acids
Bromine	See chlorine
Calcium oxide	Water
Carbon (activated)	Calcium hypochlorite, all oxidizing agents
Carbon tetrachloride	Sodium
Chlorates	Ammonium salts, acids, powdered metals, sulfur, finely divided organic or combustible materials
Chromic acid and chromium	Acetic acid, naphthalene, camphor, glycerol, alcohol, flammable liquids in general
Chlorine	Ammonia, acetylene, butadiene, butane, methane, propane (or other petroleum gases), hydrogen, sodium carbide, benzene, finely divided metals, turpentine
Chlorine dioxide	Ammonia, methane, phosphine, hydrogen sulfide
Copper	Acetylene, hydrogen peroxide
Cumene hydroperoxide	Acids (organic or inorganic)
Cyanides	Acids

Flammable liquids	Ammonium nitrate, chromic acid, hydrogen peroxide, nitric acid, sodium peroxide, halogens
Fluorine	All other chemicals
Hydrocarbons (such as butane, propane, benzene)	Fluorine, chlorine, bromine, chromic acid, sodium Peroxide
Hydrocyanic acid	Nitric acid, alkali
Hydrofluoric acid (anhydrous)	Ammonia (aqueous or anhydrous)
Hydrogen peroxide	Copper, chromium, iron, most metals or their salts, alcohols, acetone, organic materials, aniline, nitromethane, combustible materials
Hydrogen sulfide	Fuming nitric acid, oxidizing gases
Hypochlorites	Acids, activated carbon
Iodine	Acetylene, ammonia (aqueous or anhydrous), Hydrogen
Mercury	Acetylene, fulminic acid, ammonia
Nitrates	Sulfuric acid
Nitric acid (concentrated)	Acetic acid, aniline, chromic acid, hydrocyanic acid, hydrogen sulfide, flammable liquids, flammable gases, copper, brass, any heavy metals
Nitrites	Acids
Nitroparaffins	inorganic bases, amines
Oxalic acid	Silver, mercury
Oxygen	Oils, grease, hydrogen: flammable liquids, solids or gases
Perchloric acid	Acetic anhydride, bismuth and its alloys, alcohol, paper, wood, grease, oils
Peroxides, organic	Acids (organic or mineral), avoid friction, store cold
Phosphorus (white)	Air, oxygen, alkalis, reducing agents
Potassium	Carbon tetrachloride, carbon dioxide, water
Potassium chlorate	Sulfuric and other acids
Potassium perchlorate (see also chlorates)	Sulfuric and other acids
Potassium permanganate	Glycerol, ethylene glycol, benzaldehyde, sulfuric Acid
Selenides	Reducing agents
Silver	Acetylene, oxalic acid, tartartic acid, ammonium compounds, fulminic acid
Sodium	Carbon tetrachloride, carbon dioxide, water
Sodium nitrite	Ammonium nitrate and other ammonium salts
Sodium peroxide	Ethyl or methyl alcohol, glacial acetic acid, acetic anhydride, benzaldehyde, carbon disulfide, glycerin, ethylene glycol, ethyl acetate, methyl acetate, furfural

Sulfides	Acids
Sulfuric acid	Potassium chlorate, potassium perchlorate, potassium permanganate (similar compounds of light metals, such as sodium, lithium)
Tellurides	Reducing agents

APPENDIX VIII

LABORATORY SIGNAGE

IN CASE OF EMERGENCY CALL 911

Room Number _____ Department _____

Laboratory Supervisor/Principal Investigator _____

Emergency Contacts for laboratory:

<u>Name</u>	<u>Office Location</u>	<u>Office Phone</u>	<u>Home Phone</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Special Hazards/Instructions: _____

Prepared by: _____ Date Posted: _____

Note: The information in this sign must be updated at least every six months and immediately in the event of any change of emergency contacts or special hazards.

APPENDIX IX

(date)

RESPIRATOR PROGRAM FOR

(department)

Alabama A & M University

I. PURPOSE

The purpose of this program is to set forth standard operating procedures governing the selection and use of respirators. Appropriate respirators shall be used in accordance with this program to control adverse health effects caused by breathing harmful air contaminants. Though the primary objective shall be to prevent atmospheric contamination, respirators shall be used when effective engineering controls are not feasible, or while they are being implemented.

II. SCOPE

1. The following program establishes guidelines for safe practice in the use of respiratory protective devices to ensure the safety and health of Alabama A & M University staff using these devices under routine and emergency conditions.
2. The provisions of this document were established per the requirements listed in the Federal Occupational Safety and Health Administration (OSHA) Standard 29 CFR 1910.134, as enforced at Alabama A & M University.
3. Additional guidelines for this document were provided by the National Institute for Occupational Safety and Health (NIOSH) Guide to Industrial Respiratory Protection, the NIOSH Respirator Decision Logic, and American National Standards Institute (ANSI) Z88.6-1984.

III. GENERAL REQUIREMENTS

General requirements for the respirator program according to 29 CFR 1910.134 and pertinent guidelines are as follows:

1. _____ will serve as the departmental "Respirator Coordinator".
2. Respirators shall be selected by the Coordinator with assistance from Environmental Health and Safety if needed. Selection shall be made based on:

(a) The type of hazards to which the worker will be exposed;

- (b) The estimated concentration of the contaminant.
- (c) Pertinent OSHA standards (substance-specific health standards).

3. The user shall be instructed and trained in the proper use of respirators and their limitations. The Coordinator shall be responsible for assuring that training is given to the user initially and annually thereafter. An appropriate manufacturer's representative, the Environmental Health and Safety, or other qualified individuals (such as departmental Respirator Coordinators) may present this training.

Training shall include:

- (a) Proper cleaning and disinfecting of respirators,
 - (b) Proper inspection procedures,
 - (c) Proper storing of respirator,
 - (d) Instruction in actual use,
 - (e) Instruction of positive and negative pressure fit checks, and
 - (f) Actual "fit testing" which will be performed by the Environmental Health and Safety. A record of all fit testing will be provided to the Coordinator.
4. Respirators should be assigned to individual workers for their exclusive use. When this is not feasible, the Coordinator shall be responsible for ensuring that the respirator is maintained according to this program.
 5. Respirators shall be cleaned and disinfected (by the user) after each use, daily, or as often as necessary to ensure sanitary use of the respirator. In the event that respirators are shared, they must be cleaned and disinfected after each use.
 6. The Coordinator shall ensure that workers are provided a storage area for respirators that is in a convenient, clean and sanitary location. The respirators should be stored so as to not damage the integrity of the mask.
 7. Respirators shall be inspected by the user during cleaning following the procedures learned in training. Inspection shall include:
 - (a) Face piece
 - (b) Straps
 - (c) Inhalation and exhalation valves
 - (d) Filters or cartridges

Any sign of damage or excessive wear shall be reported to the Coordinator or employee's supervisor immediately.

Respirators for emergency use shall be inspected by the individuals responsible for responding to such emergencies at least once a month and after each use.

8. Appropriate surveillance of work area conditions and degree of employee exposure shall be maintained. Environmental Health and Safety will assist units by conducting air monitoring when deemed necessary, and will maintain records of such air monitoring. Air

monitoring results must also be communicated to affected workers.

9. The Coordinator will institute at least annual inspections and evaluations to determine the continued effectiveness of the _____ Respirator Program.
(department)
10. Physical examination requirement: individuals shall not be assigned to tasks requiring use of respirators unless it has been determined by a physician that they are physically able to perform the work and use the equipment. It is recommended that employees take the respirator that they will be wearing to their physical examination so that the physician knows exactly what type respirator is to be worn.
11. Only approved respirators shall be used.
12. Names of persons this plan applies to, tasks requiring respirators, and effective dates must be attached to this plan. (See **Attachment B**)
13. Training records must be maintained by the Coordinator. (See **Attachment A** "Respirator Training Record")

IV. FOR FURTHER INFORMATION

Environmental Health and Safety Department
Carter Hall 208A
372-4091

Attachment A
Alabama A & M University Respirator Training Record

Name _____ ID# _____

Division/Department _____ Job Classification _____

Physical examination completed? Yes ____ No ____ If no, when scheduled ____?
(Required prior to respirator use)

The employee listed above has completed respiratory protection training presented by
_____ on _____
(trainer) (date)

The training included the following elements:

1. The reasons for the need of respiratory protection;
2. The nature, extent, and effects of respiratory hazardous to which one may be exposed;
3. An explanation of why engineering controls are not available, or are not adequate, and if feasible, what effort is being made to reduce or eliminate the need for respirators.
4. An explanation of why a particular type of respirator has been selected for a specific respirator hazard;
5. An explanation of the operation, capabilities, and limitations of the respirator;
6. Instruction in inspecting, donning, checking the fit of, and wearing the respirator.
7. An opportunity to handle the respirator, learn how to don and wear it properly, check its seals* and wear it in a safe atmosphere;
8. An explanation of how maintenance and storage of the respirator is carried out;
9. Instructions in how to recognize and cope with emergency situations; and
10. Responsibilities of the employee and employer with regard to respiratory protection.

It is the responsibility of the respirator wearer to:

1. Use the respirator in accordance with instructions and training received;
2. Guard against damage to the respirator; and,
3. Immediately report any malfunction of the respirator to their supervisor or the Departmental Respirator Coordinator.

Employee signature _____

Trainer signature _____

*fit testing certification by the Environmental Health and Safety Department is required prior to respirator use.

Attachment B

_____ Approved Respirator Users
(department)

Name	Job Classification	Tasks Requiring Respirator Use	Type Respirator(s) Approved	Effective Date*
1. _____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____
6. _____	_____	_____	_____	_____
7. _____	_____	_____	_____	_____
8. _____	_____	_____	_____	_____

*Physical exams and re-training are required on an annual basis to maintain "approved use" status. Maintained by: _____

Send a copy of this Report to Environmental Health and Safety, Carter Hall 208A.

APPENDIX X

ALABAMA A & M UNIVERSITY

Accident Reporting Procedures

All accidents must be reported as quickly as possible. **Any fatal accident, any accident requiring hospitalization of three or more people, or any serious injury involving a student, visitor, or an employee MUST BE REPORTED to Environmental Health and Safety IMMEDIATELY by phone at 372-4091.**

STUDENT OR VISITOR ACCIDENTS

Any faculty or staff member witnessing or being informed of an accident involving a student or a visitor should report the accident using the University's Accident-Occupational Injury/Illness Report (Form). Forward the original of the Form to Environmental Health and Safety, either by e-mail or at Carter Hall 208A, P.O. Box 1058, Normal, AL 35762

EMPLOYEE ACCIDENTS

Employee accidents should be reported immediately by the employee's supervisor. *Student workers receiving pay other than scholarships, fellowships, student loans, or grants are considered employees.* All employee accidents are to be reported to **A&M Human Resources** by calling **372-5837**. The **Form** (Workers' Compensation First Report of Injury) may be completed at the time of the call by A&M Human Resource or by the employee's supervisor. The original Form , if completed by the supervisor, is to be sent to A&M Human Resources. Forms are available from A&M Human Resources, Patton Hall, Normal, AL.

If an **employee** is injured and **DOES NOT SEEK MEDICAL ATTENTION** at this time, please complete the Accident-Occupational Injury/Illness Report.

PROPERTY DAMAGE ACCIDENTS

Property Damage accidents such as fire, water, wind, theft and other property damage claims are not reported on any one form. After a loss is discovered, the loss should be reported to the Department head who will contact the University's Risk Manager at 372-5835.

APPENDIX XI

SUBSTANCES CONSIDERED CARCINOGENIC BY OSHA

Based on National Toxicological Report KNOWN CARCINOGENS, 9th ANNUAL REPORT ON CARCINOGENS 2000

Substances or groups of substances, occupational exposures associated with a technological process, and medical treatments that are known to be Carcinogenic.

Name or Synonym	CAS#
Aflatoxins	1402-68-2
4-Aminobiphenyl (4-Aminodiphenyl)	92-67-1
2-Aminonaphthalene (See 2-Naphthylamine)	91-59-8
Analgesic Mixtures Containing Phenacetin	
Arsenic Compounds, Inorganic (under Arsenic and Certain Arsenic Compounds)	
Asbestos	1332-21-4
Azathioprine	446-86-6
Benzene	71-43-2
Benzidine	92-87-5
Bis(chloromethyl) Ether	542-88-1
Busulfan (See 1,4-Butanediol Dimethylsulfonate)	55-98-1
1,4-Butanediol Dimethylsulfonate (Myleran®, Busulfan)	55-98-1
Chlorambucil	305-03-3
1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea (MeCCNU)	13909-09-6
Chloromethyl Methyl Ether	107-30-2
Chromium Hexavalent Compounds (under Chromium and Certain Chromium Compounds)	
Coal Tar (under Soots, Tars, and Mineral Oils)	8007-45-2
Coke Oven Emissions	
Creosote (Coal) (under Soots, Tars and Mineral Oils)	8001-58-9
Creosote (Wood) (under Soots, Tars, and Mineral Oils)	8021-39-4
Cyclophosphamide	50-18-0
Cyclosporin A (Cyclosporine A; Ciclosporin)	59865-13-3
Diethylstilbestrol	56-53-1
Erionite	66733-21-9
Lead Chromate (under Chromium and Certain Chromium Compounds)	7758-97-6
MeCCNU [See 1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea]	13909-09-6
Meiphalan	148-82-3
Methoxsalen (under Methoxsalen with Ultraviolet A Therapy (PUVA))	298-81-7
[methoxsalen not carcinogenic alone]	
Mineral Oils	
Mustard Gas	505-60-2
Myleran® (See 1,4-Butanediol Dimethylsulfonate)	55-98-1
2-Naphthylamine (β-Naphthylamine; 2-Aminonaphthalene)	91-59-8
Piperazine Estrone Sulfate (under Conjugated Estrogens)	7280-37-7
Radon	10043-92-2

Sodium Equilin Sulfate (under Conjugated Estrogens)	16680-47-0
Sodium Estrone Sulfate (under Conjugated Estrogens)	438-67-5
Soots	
Strontium Chromate (under Chromium and Certain Chromium Compounds)	7789-06-2
Tars	
Thiotepa [in 7 th ARC as Tris(1-aziridiny)phosphine Sulfide]	52-24-4
Thorium Dioxide	1314-20-1
Tris(1-aziridiny)phosphine Sulfide (Thiotepa)	52-24-4
Vinyl Chloride	75-01-4
Zinc Chromate (under Chromium and Certain Chromium Compounds)	13530-65-9

REASONABLY ANTICIPATED TO BE CARCINOGENS
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Name or Synonym	CAS#
Acetaldehyde	75-07-0
2-Acetylaminofluorene	53-96-3
Acrylamide	79-06-1
Acrylonitrile	107-13-1
Adriamycin® (Doxorubicin hydrochloride)	25316-40-9
2-Aminoanthraquinone	117-79-3
o-Aminoazotoluene	93-56-3
1-Amino-2-methylantraquinone	82-28-0
Amitrole	61-82-5
o-Anisidine Hydrochloride	134-29-2
Aroclor (under Polychlorinated Biphenyls)	
Aroclor® 1254 (under Polychlorinated Biphenyls)	11097-69-1
Aroclor® 1260 (under Polychlorinated Biphenyls)	11096-82-5
Azacitidine (5-Azacytidine)	320-67-2
BCNU [See Bis(chloroethyl) Nitrosourea]	154-93-8
Benz[a]anthracene (under Polycyclic Aromatic Hydrocarbons)	56-55-3
Benzo[b]fluoranthene (under Polycyclic Aromatic Hydrocarbons)	205-99-2
Benzo[j]fluoranthene (under Polycyclic Aromatic Hydrocarbons)	205-82-3
Benzo[k]fluoranthene (under Polycyclic Aromatic Hydrocarbons)	207-08-9
Benzo[a]pyrene (under Polycyclic Aromatic Hydrocarbons)	50-32-8
Benzotrichloride	98-07-7
Beryllium Aluminum Alloy (under Beryllium & Certain Beryllium Compounds)	12770-50-2
Beryllium Chloride (under Beryllium & Certain Beryllium Compounds)	7787-47-5
Beryllium Fluoride (under Beryllium & Certain Beryllium Compounds)	7787-49-7
Beryllium Hydroxide (under Beryllium & Certain Beryllium Compounds)	13327-32-7
Beryllium Oxide (under Beryllium & Certain Beryllium Compounds)	1304-56-9
Beryllium Phosphate (under Beryllium & Certain Beryllium Compounds)	13598-15-7
Beryllium Sulfate Tetrahydrate (under Beryllium & Certain Beryllium Compounds)	7787-56-6
Beryllium Zinc Silicate (under Beryllium and Certain Beryllium Compounds)	39413-47-3
Beryl Ore (under Beryllium and Certain Beryllium Compounds)	1302-52-9
Bis(chloroethyl) Nitrosourea (BCNU)	154-93-8
Bis(dimethylamino)benzophenone (See Michler's Ketone)	90-94-8
Bis(2-ethylhexyl) Phthalate [See Di(2-ethylhexyl)phthalate]	117-81-7
Bromodichloromethane	75-27-4
1,3-Butadiene	106-99-0
Butylated Hydroxyanisole (BHA)	25013-16-5
Cadmium (under Cadmium & Certain Cadmium Compounds)	7440-43-9
Cadmium Chloride (under Cadmium & Certain Cadmium Compounds)	10108-64-2
Cadmium Oxide (under Cadmium & Certain Cadmium Compounds)	1306-19-0
Cadmium Sulfate (under Cadmium & Certain Cadmium Compounds)	10124-36-4
Cadmium Sulfide (under Cadmium & Certain Cadmium Compounds)	1306-23-6
Carbon Tetrachloride	56-23-5
CCNU [See 1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea]	13010-47-4
Ceramic Fibers	
Chlordecone (see Kepone®)	143-50-0
Chlordenic Acid	115-28-6
Chlorinated Paraffins (C ₁₂ , 60% Chlorine)	108171-26-2
1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea (CCNU)	13010-47-4

Chloroform	67-66-3
3-Chloro-2-methylpropene	563-47-3
4-Chloro- <i>o</i> -phenylenediamine	95-83-0
<i>p</i> -Chloro- <i>o</i> -toluidine	95-69-2
<i>p</i> -Chloro- <i>o</i> -toluidine Hydrochloride	3165-93-3
Chlorozotocin	54749-90-5
C.I. Basic Red 9 Monohydrochloride	569-61-9
Cisplatin	15663-27-1
<i>p</i> -Cresidine	120-71-8
Cristobalite [under Silica, Crystalline (Respirable Size)]	14464-46-1
Cupferron	135-20-6
Dacarbazine	4342-03-4
Danthron (1,8-Dihydroxyanthraquinone)	117-10-2
DDT (Dichlorodiphenyltrichloroethane)	50-29-3
Decabromobiphenyl (Under Polybrominated Biphenyls)	13654-09-6
DEHP [See Di(2-ethylhexyl) Phthalate]	117-81-7
DEN (See <i>N</i> -Nitrosodiethylamine)	55-18-5
2,4-Diaminoanisoie Sulfate	39156-41-7
Diaminodiphenyl Ether (See 4,4'-Oxydianiline)	101-80-4
2,4-Diaminotoluene	95-80-7
Dibenz[<i>a,h</i>]acridine (under Polycyclic Aromatic Hydrocarbons)	226-36-8
Dibenz[<i>a,j</i>]acridine (under Polycyclic Aromatic Hydrocarbons)	224-42-0
Dibenz[<i>a,h</i>]anthracene (under Polycyclic Aromatic Hydrocarbons)	53-70-3
7H-Dibenzo[<i>c,g</i>]carbazole (under Polycyclic Aromatic Hydrocarbons)	194-59-2
Dibenzo[<i>a,e</i>]pyrene (under Polycyclic Aromatic Hydrocarbons)	192-65-4
Dibenzo[<i>a,h</i>]pyrene (under Polycyclic Aromatic Hydrocarbons)	189-64-0
Dibenzo[<i>a,i</i>]pyrene (under Polycyclic Aromatic Hydrocarbons)	189-55-9
Dibenzo[<i>a,l</i>]pyrene (under Polycyclic Aromatic Hydrocarbons)	191-30-0
1,2-Dibromo-3-chloropropane	96-12-8
1,2-Dibromoethane (Ethylene dibromide; EDB)	106-93-4
1,4-Dichlorobenzene (<i>p</i> -Dichlorobenzene)	106-46-7
3,3'-Dichlorobenzidine	91-94-1
3,3'-Dichlorobenzidine Dihydrochloride	612-83-9
Dichlorodiphenyltrichloroethane (See DDT)	50-29-3
1,2-Dichloroethane (Ethylene Dichloride)	107-06-2
Dichloromethane (Methylene Chloride)	75-09-2
1,3-Dichloropropene (Technical Grade)	542-75-6
Diepoxybutane	1464-53-5
<i>N,N</i> -Diethyldithiocarbamic acid 2-chloroallyl ester (See Sulfallate)	95-06-7
Di(2-ethylhexyl) Phthalate [DEHP; Bis(2-ethylhexyl phthalate)]	117-81-7
Diethylnitrosamine (See <i>N</i> -Nitrosodiethylamine)	55-18-5
Diethyl Sulfate	64-67-5
Diglycidyl Resorcinol Ether	101-90-6
1,8-Dihydroxyanthraquinone [See Danthron]	117-10-2
3,3'-Dimethoxybenzidine	119-90-4
4-Dimethylaminoazobenzene	60-11-7
3,3'-Dimethylbenzidine	119-93-7
Dimethylcarbonyl Chloride	79-44-7
1,1-Dimethylhydrazine (UDMH)	57-14-7
Dimethylnitrosamine (See <i>N</i> -Nitrosodimethylamine)	62-75-9
Dimethyl Sulfate	77-78-1
Dimethylvinyl Chloride	513-37-1
1,6-Dinitropyrene	42397-64-8
1,8-Dinitropyrene	42397-65-9
1,4-Dioxane	123-91-1

Direct Black 38	
Direct Blue 6	1937-37-7
Disperse Blue 1	2602-46-2
DMN (See <i>N</i> -Nitrosodimethylamine)	2475-45-8
Doxorubicin hydrochloride (See Adriamycin®)	62-75-9
ENU [See <i>N</i> -Nitroso- <i>N</i> -ethylurea (<i>N</i> -Ethyl- <i>N</i> -nitrosourea)]	25316-40-9
Epichlorohydrin	759-73-9
Estradiol-17 β (under Estrogens [Not Conjugated])	106-89-8
Estrone (under Estrogens [Not Conjugated])	50-28-2
Ethinylestradiol (under Estrogens [Not Conjugated])	53-16-7
Ethyl Acrylate	57-63-6
Ethyl Carbamate (See Urethane)	140-88-5
Ethylene Dibromide [See 1,2-Dibromoethane (EDB)]	51-79-6
Ethylene Dichloride (See 1,2-Dibromoethane)	106-93-4
Ethylene Oxide	107-06-2
Ethylene Thiourea	75-21-8
Ethyl Methanesulfonate	96-45-7
<i>N</i> -Ethyl- <i>N</i> -nitrosourea (See <i>N</i> -Nitroso- <i>N</i> -ethylurea)	62-50-0
FireMaster BP-6 (under Polybrominated Biphenyls)	759-73-9
FireMaster FF-1 (Hexabromobiphenyl, under Polybrominated Biphenyls)	
Formaldehyde (gas)	67774-32-7
Furan	50-00-0
Glasswool	110-00-9
Glycidol	
Hexabromobiphenyl (FireMaster FF-1, under Polybrominated Biphenyls)	556-52-5
Hexachlorobenzene	67774-32-7
α -Hexachlorocyclohexane (under Lindane & Other Hexachlorocyclohexane Isomers)	118-74-1
β -Hexachlorocyclohexane (under Lindane & Other Hexachlorocyclohexane Isomers)	319-84-6
γ -Hexachlorocyclohexane (under Lindane & Other Hexachlorocyclohexane Isomers)	319-85-7
Hexachlorocyclohexane (under Lindane & Other Hexachlorocyclohexane Isomers)	58-89-9
Hexachloroethane	608-73-1
Hexamethylphosphoramide	67-72-1
Hydrazine	680-31-9
Hydrazine Sulfate	302-01-2
Hydrazobenzene	10034-93-2
Indeno[1,2,3- <i>cd</i>]pyrene (under Polycyclic Aromatic Hydrocarbons)	122-66-7
Iron Dextran Complex	193-39-5
Kanechlor® (500 (under Polychlorinated Biphenyls)	9004-66-4
Kepone® (Chlordecone)	37317-41-2
Lead Acetate	143-50-0
Lead Phosphate	301-04-2
Lindane (under Lindane & other Hexachlorocyclohexane Isomers)	7446-27-7
MBOCA [See 4,4'-Methylenebis(2-chloraniline)]	58-89-9
Mestranol (under Estrogens [Not Conjugated])	101-14-4
2-Methylazairidine (Propylenimine)	72-33-3
5-Methylchrysene (under Polycyclic Aromatic Hydrocarbons)	75-55-8
4,4'-Methylenebis(2-chloraniline) (MBOCA)	3697-24-3
4,4'-Methylenebis(<i>N,N</i> -dimethylbenzenamine)	101-14-4
Methylene Chloride (See Dichloromethane)	101-61-1
4-4'-Methylenedianiline	75-09-2
4-4'-Methylenedianiline Dihydrochloride	101-77-9
	13552-44-8

Methyl Methanesulfonate	66-27-3
<i>N</i> -Methyl- <i>N'</i> -nitro- <i>N</i> -nitrosoguanidine	70-25-7
<i>N</i> -Methyl- <i>N</i> -nitroso-urea (See <i>N</i> -Nitroso- <i>N</i> -methylurea)	684-93-5
Metronidazole	443-48-1
Michler's Ketone [4,4'-(Dimethylamino)benzophenone]	90-94-8
Mirex	2385-85-5
Nickel (under Nickel & Certain Nickel Compounds)	7440-02-0
Nickel Acetate (under Nickel & Certain Nickel Compounds)	373-02-4
Nickel Carbonate (under Nickel & Certain Nickel Compounds)	3333-67-3
Nickel Carbonyl (under Nickel & Certain Nickel Compounds)	13463-39-3
Nickel Hydroxide (under Nickel & Certain Nickel Compounds)	12054-48-7
Nickel Hydroxide (under Nickel & Certain Nickel Compounds)	11113-74-9
Nickelocene (under Nickel & Certain Nickel Compounds)	1271-28-9
Nickel Oxide (under Nickel & Certain Nickel Compounds)	1313-99-1
Nickel Subsulfide (under Nickel & Certain Nickel Compounds)	12035-72-2
Nitrilotriacetic Acid	139-13-9
<i>o</i> -Nitroanisole	91-23-6
6-Nitrochrysene	7496-02-8
Nitrofen	1836-75-5
Nitrogen Mustard Hydrochloride	55-86-7
2-Nitropropane	79-46-9
1-Nitropyrene	5522-43-0
4-Nitropyrene	57835-92-4
<i>N</i> -Nitroso- <i>n</i> -butyl- <i>N</i> -(3-carboxypropyl)amine (under <i>N</i> -Nitrosodi- <i>n</i> -butylamine)	38252-74-3
<i>N</i> -Nitroso- <i>n</i> -butyl- <i>N</i> -(4-hydroxybutyl)amine (under <i>N</i> -Nitrosodi- <i>n</i> -butylamine)	3817-11-6
<i>N</i> -Nitrosodi- <i>n</i> -butylamine	924-16-3
<i>N</i> -Nitrosodiethanolamine	1116-54-7
<i>N</i> -Nitrosodiethylamine (Diethylnitrosamine; DEN)	55-18-5
<i>N</i> -Nitrosodimethylamine (Dimethylnitrosamine; DMN)	62-75-9
<i>N</i> -Nitrosodi- <i>n</i> -propylamine	621-64-7
<i>N</i> -Nitroso- <i>N</i> -ethylurea (<i>N</i> -Ethyl- <i>N</i> -nitroso-urea; ENU)	759-73-9
4-(<i>N</i> -Nitrosomethylamino)-1-(3-pyridyl)-1-butanone (NNK)	64091-91-4
<i>N</i> -Nitroso- <i>N</i> -methylurea (<i>N</i> -Methyl- <i>N</i> -nitroso-urea)	684-93-5
<i>N</i> -Nitrosomethylvinylamine	4549-40-0
<i>N</i> -Nitrosomorpholine	59-89-2
<i>N</i> -Nitrosomomicotine	16543-55-8
<i>N</i> -Nitrosopiperidine	100-75-4
<i>N</i> -Nitrosopyrrolidine	930-55-2
<i>N</i> -Nitrososarcosine	13256-22-9
NNK [See 4-(<i>N</i> -Nitrosomethylamino)-1-(3-pyridyl)-1-butanone]	64091-91-4
Norethisterone	68-22-4
Ochratoxin A	303-47-9
Octabromobiphenyl (Under Polybrominated Biphenyls)	61288-13-9
4,4'-Oxydianiline	101-80-4
Oxymetholone	434-07-1
PAHs (See Polycyclic Aromatic Hydrocarbons)	
PBBs (See Polybrominated Biphenyls)	
PCBs (under Polychlorinated Biphenyls)	1336-36-3
Perchloroethylene (See Tetrachloroethylene)	127-18-4
Phenacetin (See also Analgesic Mixtures Containing Phenacetin)	62-44-2
Phenazopyridine Hydrochloride	136-40-3
Phenoxybenzamine Hydrochloride	63-92-3
Phenytoin	57-41-0
Polybrominated Biphenyls (PBBs)	

Polychlorinated Biphenyls (PCBs)	1336-36-3
Polycyclic Aromatic Hydrocarbons (PAHs)	
Procarbazine Hydrochloride	366-70-1
Progesterone	57-83-0
1,3-Propane Sultone	1120-71-4
β -Propiolactone	57-57-8
Propylene Oxide	75-56-9
Propylenimine (See 2-Methylaziridine)	75-55-8
Propylthiouracil	51-52-5
Quartz [under Silica, Crystalline (Respirable Size)]	14808-60-7
Reserpine	50-55-5
Saccharin	81-07-2
Safrole	94-59-7
Selenium Sulfide	7446-34-6
Silica, Crystalline (Respirable Size)	
Streptozotocin	18883-66-4
Sulfallate	95-06-7
2,3,7,8-Tetrachlorodibenzo- <i>p</i> -dioxin (TCDD)	1746-01-6
Tetrachloroethylene (Perchloroethylene)	127-18-4
Tetranitromethane	509-14-8
Thioacetamide	62-55-5
Thiourea	62-56-6
Toluene Diisocyanate	26471-62-5
<i>o</i> -Toluidine	95-53-4
<i>o</i> -Toluidine Hydrochloride	636-21-5
Toxaphene	8001-35-2
1,1,1-Trichloro-2,2-bis(<i>p</i> -chlorophenyl)ethane (See DDT)	50-29-3
2,4,6-Trichlorophenol	88-06-2
1,2,3-Trichloropropane	96-18-4
Tridymite [under Silica, Crystalline (Respirable Size)]	15468-32-3
Tris(2,3-dibromopropyl) Phosphate	126-72-7
UDMH (See 1,1-Dimethylhydrazine)	57-14-7
Urethane (Urethan; Ethyl carbamate)	51-79-6
4-Vinyl-1-cyclohexene Diepoxide	106-87-6

APPENDIX XII

HAZARD RATING INFORMATION FOR NFPA FIRE DIAMONDS

This appendix provides hazard rating information for many common chemicals. You may wish to use labels that include the NFPA fire diamond. Use this reference to complete the health, fire, reactivity, and special notice areas in the diamond. An explanation of the hazard rating system is given below.

Health (Blue Diamond)

0	No chemical is without some degree of toxicity.
1	Slightly toxic material. May cause irritation, but only minor residual injury even without treatment. Recognized innocuous materials when used with responsible care.
2	Moderately toxic material. Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical treatment is given.
3	Seriously toxic material. Short term exposure could cause serious temporary or residual injury even though prompt medical treatment is given. Includes known or suspect small animal carcinogens, mutagens or teratogens.
4	Highly toxic material. Very limited exposure could cause death or major injury even though prompt medical treatment is given. Includes known or suspect human carcinogens, mutagens or teratogens.

Flammability (Red Diamond)

0	Materials which will not burn.
1	Slightly combustible. Materials that require considerable preheating before ignition can occur. This rating includes most ordinary combustible materials.
2	Combustible. Materials that must be moderately heated before ignition can occur. Including liquids having a flash point above 100 degrees F, and solids that readily give off flammable vapors.
3	Flammable. Liquids and solids that can be ignited under almost all ambient temperature conditions. Including liquids with a flash point below 73 degrees F and a boiling point above 100 degrees F, solid materials which form coarse dusts that burn rapidly without becoming explosive, materials which burn rapidly by reason of self-contained oxygen (i.e. organic peroxides), and materials which ignite spontaneously when exposed to air.
4	Extremely flammable. Materials which will rapidly vaporize at normal pressure and temperature and will burn readily. Including: gases, cryogenic materials, any liquid or gaseous material having a flash point below 73 degrees F and a boiling point below 100 degrees F, and materials which can form explosive mixtures with air.

Reactivity (Yellow Diamond)

0	Materials which are normally stable, even under fire conditions, and which are not reactive with water.
1	Materials which are normally stable, but which can become unstable at elevated temperatures and pressures, or which may react with water with some release of energy, but not violently.
2	Materials which in themselves are normally unstable and readily undergo violent chemical change, but do not detonate. It includes materials which may react violently with water or which may form potentially explosive mixtures with water.
3	Materials which in themselves are capable of detonation but which require a strong initiating source, or which must be heated first. This rating includes materials which are shock sensitive at elevated temperatures, and which react explosively with water without requiring heat.
4	Materials which in themselves are readily capable of detonation or explosive decomposition at normal temperatures and pressures. Includes materials which are shock sensitive at normal temperatures and pressures.

Special Notice (White Diamond)

OX	Denotes materials that are oxidizing agents. These compounds give up oxygen easily, remove hydrogen from other compounds or attract negative electrons.
W	Denotes materials that are water reactive. These compounds undergo rapid energy releases on contact with water.

Hazard Rating Information for NFPA Fire Diamonds

Compound	Health	Fire	Reactivity	S/N
Acetal	2	3	0	
Acetaldehyde	2	4	2	
Acetic Acid (glacial)	2	2	2	
Acetic Anhydride	3	2	2	W
Acetone	1	3	0	
Acetonitrile	2	3	0	
Acetophenone	1	2	0	
Acetyl Chloride	3	3	2	W
Acetylene	1	4	3	
Acetyl Peroxide	1	2	4	
Acrolein	3	3	2	
Acrolein Dimer	1	2	1	
Acrylic Acid (glacial)	3	2	2	
Acrylonitrile	4	3	2	
Adipic Acid	-	1	0	
Adiponitrile	4	2	0	
Aldol	3	2	1	
Allyl Acetate	1	3	0	
Allyl Alcohol	3	3	0	
Allyl Bromide	3	3	1	
Allyl Chloride	3	3	1	
Aluminum (dust or powder)	0	1	1	
3-Aminopropanol	3	2	0	
Ammonia, Anhydrous	3	1	0	
Ammonium Bromide	2	0	0	
Ammonium Chloride	2	0	0	
Ammonium Fluoride	3	0	0	
Ammonium Nitrate	2	0	3	OX
Ammonium Perchlorate	2	0	4	OX
Ammonium Permanganate	2	0	3	OX
Ammonium Sulfate	3	0	0	
Amyl Acetate	1	3	0	
Amyl Alcohol	1	3	0	
Amylamine	3	3	0	
Amylbenzene	1	2	0	
Amyl Chloride	1	3	0	
Amyl Ether	1	2	0	
Amyl Maleate	0	1	0	
Amyl Nitrate	2	2	0	OX
o-Amyl Phenol	2	1	0	

Amyl Propionate	0	2	0	
Amyl Stearate	0	1	0	
Amyl Toluene	2	2	0	
Aniline	3	2	0	
o-Anisidine	2	1	0	
Anisole	1	2	0	
Antimony Pentafluoride	3	0	1	
Antimony Pentasulfide	3	1	1	
Arsenic Chloride	3	0	0	
Arsenic Trisulfide	3	1	0	
Barium Chlorate	1	0	2	OX
Barium Nitrate	1	0	0	OX
Barium Peroxide	1	0	0	OX
Benzaldehyde	2	2	0	
Benzoic Acid	2	1	-	
Benzol (benzene)	2	3	0	
Benzotrifluoride	4	3	0	
Benzoyl Chloride	3	2	1	W
Benzyl Acetate	1	1	0	
Benzyl Alcohol	2	1	0	
Benzyl Cyanide	2	1	0	
Benzyl Salicylate	1	1	0	
Beryllium (dust or powder)	4	1	0	
Biphenyl	2	1	0	
Boron Trifluoride	3	0	1	
Bromine	4	0	0	OX
Bromine Trifluoride	4	0	3	OX, W
Bromobenzene	2	2	0	
o-Bromotoluene	2	2	0	
Butadiene Monoxide	2	3	2	
Butane	1	4	0	
1-Butane	1	4	0	
Butenediol	1	1	0	
Butyl Acetate	1	3	0	
Butyl Acetoacetate	1	2	0	
Butyl Acrylate	2	2	2	
Butyl Alcohol	1	3	0	
Butylamine	2	3	0	
Butylamine Oleate	3	2	0	
Butylbenzene	2	2	0	
Butyl Benzoate	1	1	0	
Butyl Bromide	2	3	0	
Butyl Chloride	2	3	0	

Butylcyclohexane	0	-	0	
Butyldecalin	1	1	0	
Butyl Formate	2	3	0	
N-Butyl Isocyanate	3	2	2	
Butyl Isovalerate	0	-	-	
Butyl Lactate	1	2	0	
Butyl Methacrylate	2	2	0	
Butyl Naphthalene	1	1	0	
Butyl Nitrate	1	3	3	
Butyl Oxalate	0	1	0	
Butyl Propionate	2	3	0	
Butyl Stearate	1	1	0	
Butyl Trichlorosilane	2	2	0	
Butyraldehyde	2	3	0	
Butyraldol	2	2	0	
Butyraldoxime	2	2	0	
Butyric Acid	2	2	0	
Calcium Carbide	1	4	2	W
Calcium Chlorate	2	0	2	OX
Calcium Cyanide	3	0	0	
Calcium Hypochlorite	2	0	2	OX
Calcium Oxide	1	0	1	
Camphor	0	2	0	
Caproic Acid	2	1	0	
Capryldehyde	2	2	0	
Caprylyl Chloride	3	2	1	
Carbon Disulfide	2	3	0	
Carbon Monoxide	2	4	0	
Carbon Tetrachloride	3	0	0	
Castor Oil	0	1	0	
Chlorine	3	0	0	OX
Chlorine Monoxide	3	4	3	
Chloroacetic Acid	3	1	0	
Chloroaceto Phenone	2	1	0	
Chlorobenzene	2	3	0	
Chloroform	2	0	0	
Chloropicrin	4	0	3	
Chlorotoluene	2	2	0	
Chromic Acid	3	0	1	OX
Citral	0	2	0	
Cobalt Naphtha	1	2	0	
Coconut Oil	0	1	0	
Cod Liver Oil	0	1	0	

Corn Oil	0	1	0	
Creosote Oil	2	2	0	
o-Cresol	3	2	0	
Crotonaldehyde	3	3	2	
Crotonic Acid	3	2	0	
Crotononitrile	-	1	0	
Cumene	2	3	0	
Cupric Nitrate	1	0	0	OX
Cyanogen	4	4	2	
Cyanogen Bromide	3	0	2	
Cyclobutane	1	4	0	
Cyclohexane	1	3	0	
Cyclohexanol	1	2	0	
Cyclohexanone	1	2	0	
Cyclohexene	1	3	0	
Cyclohexenone	1	3	0	
Cyclohexyl Chloride	2	3	0	
Cyclopentane	1	3	0	
Cyclopentene	1	3	1	
Cyclopentanone	2	3	0	
Cyclopropane	1	4	0	
Decaborane	3	2	1	
Decane	0	2	0	
Decanol	0	2	0	
1-Decene	0	2	0	
Decylamine	2	1	0	
Dehydroacetic Acid	1	1	0	
Denatured Alcohol	0	3	0	
Deuterium	0	4	0	
Diacetone Alcohol	1	2	0	
Diamyl Sulfide	2	2	0	
Dibenzoyl Peroxide	1	4	4	OX
Diborane	3	4	3	W
Dibutylamine	3	2	0	
Dibutyl Ether	2	3	0	
Dibutyl Oxalate	0	1	0	
Dibutyl Phosphite	3	2	0	
Dibutyl Phthalate	0	1	0	
o-Dichlorobenzene	2	2	0	
1,2-Dichlorobutane	2	2	0	
1,1-Dichloroethene	2	4	2	
1,2-Dichloroethylene	2	3	2	
Dichlorosilane	3	4	2	

Didecyl Ether	0	1	0	
Diesel Fuel Oil No. 1	0	2	0	
Diethylamine	2	3	0	
Diethylene Glycol Dimethyl Ether	1	2	1	
Diethylene Triamine	3	1	0	
Diethyl Fumarate	1	1	0	
Diethyl Ketone	1	3	0	
Diethyl Succinate	1	1	0	
Diethyl Sulfate	3	1	1	
Diethylzinc	0	3	3	
Dihexylamine	2	1	0	W
Diisobutylamine	3	3	0	
Diisobutyl Carbinol	1	2	0	
Diisobutyl Ketone	1	2	0	
Diisooctyl Phthalate	0	1	0	
Diisopropylamine	3	3	0	
Diisopropyl Benzene	0	2	0	
Diketene	2	2	2	
Dimethylamine	3	4	0	
N, N-Dimethylaniline	3	2	0	
2,2-Dimethylbutane	1	3	0	
Dimethyldioxane	2	3	0	
N, N-Dimethylformamide	1	2	0	
Dimethyl Maleate	1	1	0	
2,3-Dimethyloctane	0	2	0	
2,3-Dimethylpentane	0	3	0	
Dimethyl Phthalate	0	1	0	
Dimethyl Sulfate	4	2	0	
dimethyl Sulfide	2	4	0	
Dimethyl Sulfoxide	1	1	0	
Dinitrobenzene (ortho)	3	1	4	
2,4-Dinitrotoluene	3	1	3	
Diethyl Ether	0	1	0	
p-Dioxane	2	3	1	
Dioxolane	2	3	2	
Dipentene	0	2	0	
Diphenylamine	3	1	0	
Diphenyl Phthalate	0	1	0	
Dipropylamine	3	3	0	
Divinylbenzene	2	2	2	
Divinyl Ether	2	3	2	
Dodecane	0	2	0	
1-Dodecanethiol	2	1	0	

1-Dodecanol	0	1	0	
Endrin (dry)	2	0	0	
Epichlorohydrin	3	2	1	
Ethane	1	4	0	
Ethanolamine	2	2	0	
Ethoxybenzene	0	2	0	
3-Ethoxypropanal	2	2	0	
Ethyl Acetate	1	3	0	
Ethyl Acrylate	2	3	2	
Ethyl Alcohol	0	3	0	
Ethylamine	3	4	0	
Ethylbenzene	2	3	0	
Ethyl Benzoate	1	1	0	
Ethyl Borate	2	3	0	
Ethyl Bromide	2	1	0	
Ethylbutylamine	3	3	0	
Ethyl Butyl Carbonate	2	2	1	
Ethyl Butyl Ketone	1	2	0	
Ethyl Butyrate	0	3	0	
Ethyl Caprylate	2	2	0	
Ethyl Chloride	2	4	0	
Ethyl Crotonate	2	3	0	
Ethylcyclohexane	1	3	0	
Ethylene	1	4	2	
Ethylenediamine	3	2	0	
Ethylene Dichloride	2	3	0	
Ethylene Glycol	1	1	0	
Ethylene Glycol Dibutyl Ether	1	2	0	
Ethylene Glycol Ethylbutyl Ether	1	2	0	
Ethylene Glycol Monobutyl Ether Acetate	1	2	0	
Ethylene Oxide	2	4	3	
Ethyl Ether	2	4	1	
Ethyl Formate	2	3	0	
Ethyl Isobutyrate	0	3	0	
Ethyl Mercaptan	2	4	0	
4-Ethylmorpholine	2	3	0	
Ethyl Nitrate	2	3	4	
Ethyl Oxalate	0	2	0	
Ethyl Propionate	-	3	0	
Ethyl Silicate	2	2	0	
Fluorine	4	0	3	W, OX
Formaldehyde (water solution)	2	2	0	
Formarnide	2	1	-	

Formic Acid	3	2	0	
Furan	1	4	1	
Furfuryl Alcohol	1	2	1	
Gas, Natural	1	4	0	
Gasoline 56-100 Octane	1	3	0	
Glycerine	1	1	0	
Glycidyl Acrylate	0	2	0	
Heptane	1	3	0	
2-Heptanol	0	2	0	
Heptylene	0	3	0	
Hexadecane	0	1	0	
Hexanal	2	3	1	
Hexane	1	3	0	
3-Hexanone	1	3	0	
1-Hexene	1	3	0	
Hexyl Alcohol	1	2	0	
Hexyl Methacrylate	0	2	0	
Hydrazine (Anhydrous)	3	3	2	
Hydrocyanic Acid-96%	4	4	2	
Hydrogen	0	4	0	
Hydrochloric Acid	3	0	0	
Hydrobromic Acid	3	0	0	
Hydrofluoric Acid	4	0	0	
Hydrogen Peroxide (35% to 52% by weight)	2	0	1	OX
Hydrogen Sulfide	3	4	0	
Hydroquinone	2	1	0	
Isoamyl Acetate	1	3	0	
Isoamyl Alcohol	1	2	0	
Isobutane	1	4	0	
Isobutyl Acetate	1	3	0	
Isobutyl Acrylate	1	3	1	
Isobutyl Alcohol	1	3	0	
Isobutylbenzene	2	2	0	
Isobutyl Chloride	2	3	0	
Isobutyl Methyl Ketone	2	3	0	
Isobutyraldehyde	2	3	1	
Isobutyric Acid	1	2	0	
Isobutyric Anhydride	1	2	1	W
Isodecaldehyde	0	2	0	
Isodecanoic Acid	0	1	0	
Isohexane	1	3	0	
Isooctane	0	3	0	

Isooctanoic Acid	0	1	0	
Isooctyl Alcohol	0	2	0	
Isopentane	1	4	0	
Isophorone	2	2	0	
Isoprene	2	4	2	
Isopropyl Acetate	1	3	0	
Isopropyl Alcohol	1	3	0	
Isopropyl Chloride	2	4	0	
Isopropyl Ether	2	3	1	
Jet Fuels (JP-4)	1	3	0	
Jet Fuels (JP-5)	0	2	0	
Lanolin	0	1	0	
Lead Arsenates	2	0	0	
Lead Nitrate	1	0	0	OX
Lead Thiocyanate	1	1	1	
Lithium	1	1	2	W
Lithium Hydride	3	4	2	W
Lubricating Oil, Mineral	0	1	0	
Magnesium (including all alloys)	0	1	2	W
Magnesium Nitrate	1	0	0	OX
Magnesium Perchlorate	1	0	0	OX
Maleic Anhydride	3	1	1	
Mercuric Cyanide	3	0	0	
Mesityl Oxide	3	3	0	
Methacrylic Acid	3	2	2	
Methane	1	4	0	
Methyl Acetate	1	3	0	
Methyl Acrylate	2	3	2	
Methylal	2	3	2	
Methyl Alcohol	1	3	0	
Methylamine	3	4	0	
Methyl Amyl Ketone	1	2	0	
Methyl Benzoate	0	2	0	
Methyl Borate	2	3	1	
Methyl Bromide	3	1	0	
Methyl Butyl Ketone	2	3	0	
Methyl Carbonate	2	3	1	
Methyl Cellosolve Acetate	0	2	0	
Methyl Chloride	2	4	0	
Methyl Chloroacetate	2	2	1	
Methylcyclohexane	2	3	0	
Methylcyclohexanone	-	2	0	
Methylcyclopentane	2	3	0	

Methylene Chloride	3	1	1	
Methylene Diisocyanate	1	2	1	W
Methyl Ether	2	4	1	
Methyl Ethyl Ether	2	4	1	
Methyl Ethyl Ketone	1	3	0	
Methyl Formate	2	4	0	
Methyl Glycol Acetate	1	2	0	
Methyl Hexyl Ketone	0	2	0	
Methylhydrazine	3	3	2	
Methyl Isoamyl Ketone	1	2	0	
Methyl Isobutyl Carbinol	2	2	0	
Methyl Isobutyl Ketone	2	3	0	
Methyl Isocyanate	2	3	3	W
Methyl Lactate	1	2	0	
Methyl Mercaptan	2	4	0	
Methyl Methacrylate	2	3	2	
Methyl Parathion (solid)	4	1	2	
2-Methyl-1-Pentene	1	3	0	
Methyl Phenylacetate	0	2	0	
1-Methyl Piperazine	2	2	0	
Methyl Propionate	1	3	0	
Methyl Propyl Ketone	2	3	0	
2-Methylpyrazine	2	2	0	
Methylpyrrole	2	3	1	
Methylpyrrolidine	2	3	1	
Methyl Salicylate	1	1	0	
Methyl Stearate	0	1	0	
Methyl Toluene Sulfonate	2	1	0	
Methyl Vinyl Ketone	3	3	2	
Mineral Oil	0	1	0	
Mineral Spirits	0	2	0	
Morpholine	2	3	0	
Mustard Oil	3	2	0	
Naptha	1	3	0	
Napthalene	2	2	0	
Nickel Carbonyl	4	3	3	
Nicotine	4	1	0	
Nitric Acid	3	0	0	OX
p-Nitroaniline	3	1	3	
Nitrobenzene	3	2	0	
Nitrobiphenyl	2	1	0	
Nitrochlorobenzene	3	1	1	
Nitroethane	1	3	3	

Nitrogen (liquified)	3	0	0	
Nitrogen Peroxide	3	0	0	OX
Nitrogen Trioxide	3	0	0	OX
Nitroglycerine	2	2	4	
Nitromethane	1	3	3	
1-Nitropropane	1	3	1	
o-Nitrotoluene	2	1	4	
Nonadecane	0	1	0	
Nonane	0	3	0	
Nonene	0	3	0	
Nonylbenzene	0	1	0	
Octadecane	0	1	0	
Octane	0	3	0	
2-Octanol	1	2	0	
1-Octene	1	3	0	
Oleic Acid	0	1	0	
Olive Oil	0	1	0	
Oxalic Acid	2	1	0	
Oxygen (liquid)	3	0	0	OX
Paraffin Oil	0	1	0	
Paraformaldehyde	2	1	0	
Paraldehyde	2	3	1	
Parathion	4	1	2	
Pentaborane	3	3	2	
Pentachlorophenol (dry)	3	0	0	
Pentane	1	4	0	
Pentanoic acid	2	1	0	
Pentaphen	2	1	0	
1-Pentene	1	4	0	
Perchloric Acid	3	0	3	OX
Perchloroethylene	2	0	0	
Petroleum, Crude	1	3	0	
Petroleum Ether	1	4	0	
Phenol	3	2	0	
Phenylacetaldehyde	1	2	0	
Phenyl Acetate	1	2	0	
Phenylacetic Acid	1	1	0	
o-Phenylenediamine	-	1	0	
Phenylhydrazine	3	2	0	
Phenylpropyl Alcohol	0	1	0	
Phosgene	4	0	0	
Phosphine	3	4	1	
Phosphoric Acid	2	0	0	

Phosphorus Pentasulfide	3	1	2	W
Phosphorus, Red	0	1	1	
Phosphorus Trichloride	3	0	2	W
Phosphorus, White or Yellow	3	3	1	
Phosphoryl Chloride	3	0	2	W
Phthalic Acid	0	1	1	
Phthalic Anhydride	2	1	0	
Picric Acid	2	4	4	
Pine Oil	0	2	0	
Pine Tar	0	2	0	
Piperazine	2	2	0	
Piperidine	2	3	3	
Potassium	3	1	2	W
Potassium Bromate	1	0	0	OX
Potassium Chlorate	2	0	0	OX
Potassium Cyanide	3	0	0	
Potassium Hydroxide (lye)	3	0	1	
Potassium Nitrate	1	0	0	OX
Potassium Permanganate	1	0	0	OX
Potassium Peroxide	3	0	2	W, OX
Potassium Persulfate	1	0	0	OX
Potassium Sulfide	2	1	0	
Propane	1	4	0	
Propionic Acid	2	2	0	
Propionyl Chloride	3	3	1	
Propyl Acetate	1	3	0	
Propyl Alcohol	1	3	0	
Propylamine	3	3	0	
Propyl Chloride	2	3	0	
Propylene	1	4	1	
Propylene Dichloride	2	3	0	
Propylene glycol	0	1	0	
Propylene Oxide	2	4	2	
n-Propyl Ether	-	3	0	
Propyl Nitrate	2	4	3	OX
Pyridine	2	3	0	
Pyrrole	2	2	0	
Pyrrolidine	2	3	1	
Quinoline	2	1	0	
Resorcinol	-	1	0	
Rhodinol	0	1	0	
Salicylic Acid	0	1	0	
Silane	1	4	2	

Silver Nitrate	1	0	0	OX
Sodium	3	1	2	W
Sodium Chlorate	1	0	2	OX
Sodium Chlorite	1	1	2	OX
Sodium Cyanide	3	0	0	
Sodium Fluoride	2	0	0	
Sodium Hydride	3	3	2	W
Sodium Hydroxide (lye)	3	0	1	
Sodium Nitrate	1	0	0	OX
Sodium Perchlorate	2	0	2	OX
Sodium Peroxide	3	0	2	OX, W
Sodium-Potassium Alloys	3	3	2	W
Sodium Sulfide	2	1	0	
Stannic Chloride	3	0	1	
Stearic Acid	1	1	0	
Stearyl Alcohol	0	-	0	
Stoddard Solvent	0	2	0	
Styrene	2	3	2	
Sulfur	2	1	0	
Sulfur Chloride	2	1	2	W
Sulfur Dioxide	2	0	0	
Sulfuric Acid	3	0	2	W
Tannic Acid	0	1	0	
Terephthaloyl Chloride	3	1	0	
Tetrachlorobenzene	0	10	0	
Tetrachloroethylene	2	0	0	
Tetradecanol	0	1	0	
Tetraethylene Glycol	1	1	0	
Tetraethyl Lead, Compounds	3	2	3	
Tetrafluoroethylene	3	4	3	
Tetrahydrofuran	2	3	1	
Tetramethyl Lead, Compounds	3	3	3	
Thionyl Chloride	3	0	2	W
Thiophene	2	3	0	
Titanium Tetrachloride	3	0	1	
Toluene	2	3	0	
Toluene-2,4-Diisocyanate	3	1	1	
o-Toluidine	3	2	0	
Triamylamine	2	1	0	
Triamylbenzene	0	1	0	
Tributylamine	2	2	0	
Tributyl Phosphate	2	1	0	
Tributylphosphine	0	1	0	

Tributyl Phosphite				
1,1,1-Trichloroethane	2	1	1	
Trichloroethylene	2	1	0	
Trichloroethylsilane	2	1	0	
Trichlorosilane	3	3	0	
Triethanolamine	3	4	2	W
Triethylamine	2	1	1	
Triethyl Phosphate	2	3	0	
Triisobutyl Borate	0	1	1	
Trimethylamine	3	2	1	
Trimethylchlorosilane	2	4	0	
Trinitrobenzene	3	3	2	W
Trinitrotoluene (tnt)	2	4	4	
Trioxane	2	4	4	
Triphenylmethane	2	2	0	
Tripropylene	0	1	0	
Tripropylene Glycol	0	3	0	
Turpentine	0	1	0	
2-Undecanol	1	3	0	
Valeraldehyde	1	1	0	
Vanadium Tetrachloride	1	3	0	
Vinyl Acetate	3	0	2	W
Vinyl Bromide	2	3	2	
Vinyl Butyl Ether	2	0	1	
Vinyl Chloride	2	3	2	
Vinyl Crotonate	2	4	1	
Vinyl Ethyl Alcohol	2	3	2	
Vinyl Ethyl Ether	0	2	0	
Vinyl Fluoride	2	4	2	
Vinylidene Chloride	1	4	2	
Vinylidene fluoride	2	4	2	
Vinyl Methyl Ether	1	4	2	
Vinyl Propionate	2	4	2	
Vinyl Toluene	2	3	2	
o-Xylene	2	2	1	
o-Xylidine	2	3	0	
Zinc (powder or dust)	3	1	0	
Zinc Chlorate	0	1	1	
Zirconium Tetrachloride	2	0	2	OX
	3	0	1	