

輔仁大學食品科學系 實驗室緊急應變計畫

**Fu Jen Catholic University
Department of Food Science
Laboratory Emergency Response Plan**

2024/8/1

Sign: _____

Table of Contents

Chapter One: Introduction	1
Chapter Two: Categories of Toxic Chemical Substances	1
Chapter Three: Organization of Emergency Response Teams	1
1. Emergency Response Teams	1
2. Delegation of Duties	2
Chapter Four: Emergency Report Details	3
1. Emergency Report Procedures	3
2. Content of Report	3
3. Making an Emergency Report	3
4. Emergency Report Flow Chart	4
5. Emergency Telephone Numbers	5
Chapter Five: Handling an Accident	5
1. Emergency and Preventive Measures	5
(1) Accidents	5
(2) Chemical Leaks and Fires	5
2. Principles and Methods of Rescue	6
(1) Rescue Principles	6
(2) First Aid Flow Chart	7
(3) Handling the Situation Afterward	9
Sample Accident Reports/Announcements	10

Chapter One: Introduction

This Laboratory Emergency Response Plan was created in order to ensure the safety of the Department of Food Science and to take measures to prevent hazards. The Plan was drawn up in accordance with Article 3, paragraph two of Regulations Governing the Management of Toxic Chemical Substances at Academic Institutions, promulgated by the Environmental Protection Agency. Routine safety drills will be carried out in accordance with the Plan to ensure that when an accident occurs, members of the department are able to rapidly adopt effective emergency response measures, thereby reducing loss of life and property to greatest extent possible, preventing damage to the environment, and ensuring the safety of the workplace and surrounding areas.

Chapter Two: Categories of Toxic Chemical Substance

Toxic chemical substances are categorized into the following four classes, based on toxicity:

Class I: a toxic chemical substance that is not prone to decompose in the environment or that pollutes the environment or endangers human health due to bioaccumulation, bioconcentration or biotransformation (e.g. chloroform [regulatory control number: 054]).

Class II: a toxic chemical substance that causes tumors, infertility, teratogenesis, genetic mutations or other chronic diseases (e.g. acrylamide [regulatory control number: 050]).

Class III: a toxic chemical substance that endangers human health or the lives of biological organisms immediately upon exposure (e.g. cyanide [regulatory control number: 046]).

Class IV: a toxic chemical substance for which there is concern of pollution of the environment or the endangerment of human health (e.g. dichloromethane [regulatory control number: 079]).

Please refer to the Material Safety Data Sheet (MSDS) and the chemical identification number of a product for greater details.

Chapter Three: Organization of Emergency Response Teams

1. Emergency Response Teams

Emergency Response Teams ensure that all rescuers are aware of their responsibilities in the event of an accident. They provide top-down communication, administrative coordination to support prevention and rescue operations, and impose order at the scene of an accident, thereby reducing potential damage to the greatest extent possible, while working to restore the site back to normal with the utmost speed. The delegation of duties detailed below may be adjusted based on the scale of the accident or depending on the number of personnel at the site.

2. Delegation of Duties

Rescue Team	Leader/Team Members	Duties
On-Site Commander Deputy Commander	Program Director, Program Security Personnel, Representative of Environmental Health and Safety Center	To lead and direct on-site rescue operations and the handling of chemical substances, as well as request necessary assistance
Response Task Force	Laboratory Supervisor (Advisor)	To lead rescue and response efforts on-site as well as handling the leaked substance, and coordinate communication between programs/divisions
Rescue Team	蘇俊翰老師 陳邦元老師 謝榮峯老師 陳奕鳴老師 郭家禎助教	<ol style="list-style-type: none"> 1. To assist in analyzing the accident; provide safety information and rescue tools 2. To assist in accident relief, control of the situation, and in handling chemical substances 3. To provide timely information, manpower, and resources, as well as directing emergency response teams from off campus to the location of the accident
Medical Team	呂君萍老師 張書華秘書	<ol style="list-style-type: none"> 1. To assist the Sanitation Division in setting up temporary medical centers upwind from the accident 2. To assist in rescuing and providing medical services to injured personnel
Fire Rescue Team	陳政雄老師 詹雅雯助教	To provide firefighting equipment and control the situation
Evacuation Teams	詹雅雯助教 (1 st Floor) 董佳欣技士 (1 st Floor) 謝榮峯老師 (2 nd Floor) 楊琚堯老師 (2 nd Floor) 陳奕鳴老師 (3 rd Floor) 高彩華老師 (3 rd Floor) 蘇俊翰老師 (4 th Floor)	<ol style="list-style-type: none"> 1. To assist in evacuating the area and restricting entrance 2. To take head counts 3. To dispatch supporting personnel
Mobile Support Team	董佳欣技士	<ol style="list-style-type: none"> 1. To assist in rescue operations 2. To direct rescue vehicles to the site of the accident

Chapter Four: Emergency Report Details

1. Emergency Report Procedures

- (1) Whoever discovers an emergency must immediately report it to the supervisor or notify staff at the department office.

- (2) Office staff must then notify all faculty, staff, and students of the situation, and, based on severity, notify the Director to form an emergency response team.
- (3) If there is a leak, chemical reaction, or sudden accident which contaminates the work site and surrounding environment, or there is an accident during the transportation of a toxic chemical substance which may pose a risk to the environment or human health, the laboratory supervisor must adopt emergency response measures immediately, and then notify the department office no later than one hour after the accident.
- (4) Within twelve hours after the accident occurs, the department office must notify the college, which will then make a report to the President. The office must complete and submit a Laboratory Accident Investigation Report to the Environmental Health and Safety Center within three days following the accident.

2. Content of Report

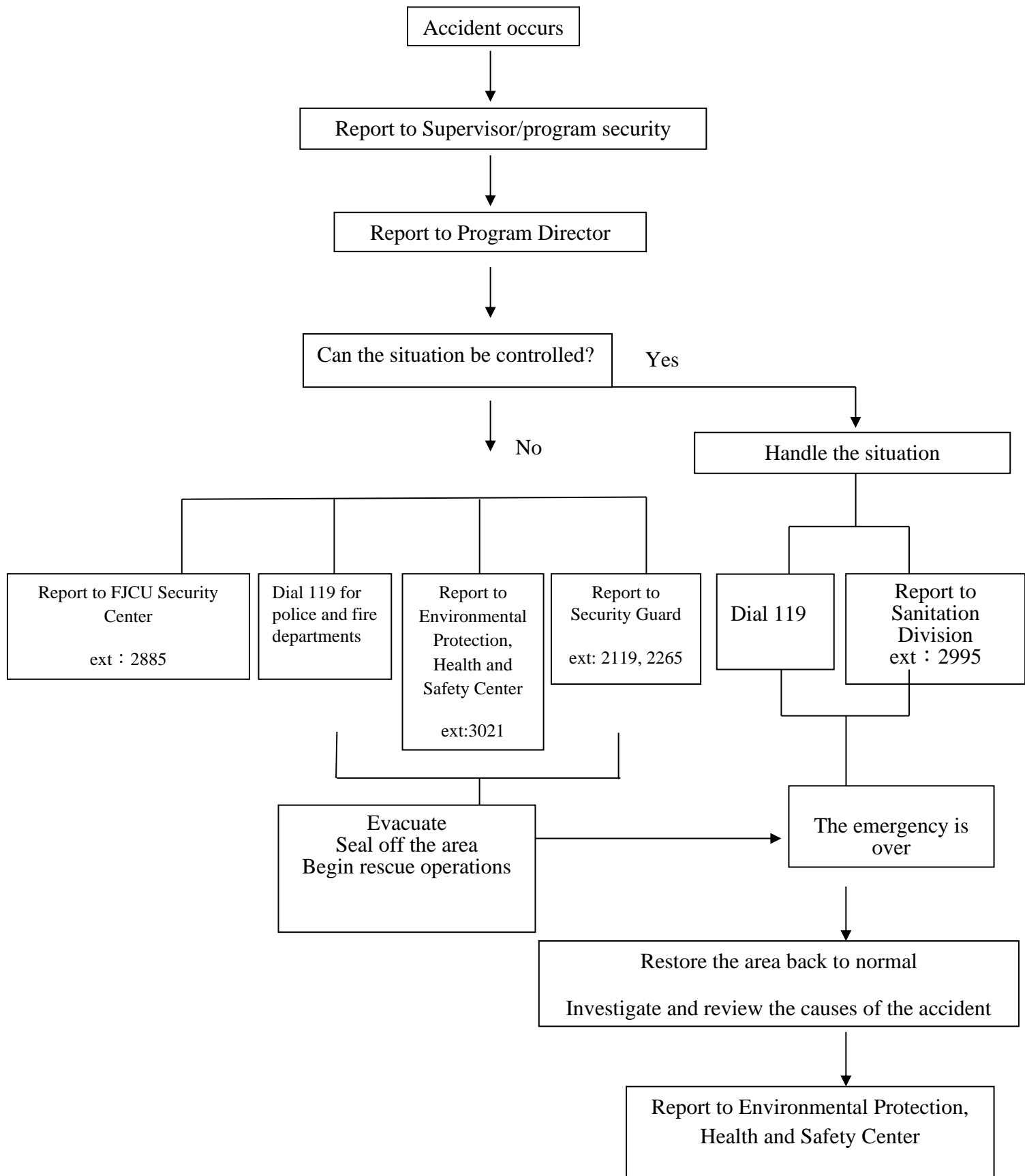
A report must be made in the briefest, most effective way possible to ensure that important details are understood and delays are avoided. A formalized method of making reports can be created in advance. Laboratory personnel can then drill making a report to ensure that crucial details are not omitted in the confusion of an emergency. Please refer to Sample Accident Reports/Announcements at the end of this plan for examples. Reports must include the details below:

1. Name, position, and place of work/study of the person making the report.
2. Time and location of accident.
3. A description of the situation and casualties.
4. Methods that have been or will be adopted to handle the situation.
5. Possible assistance required.
6. Other details.

3. Making an Emergency Report

Make a report of the situation to neighboring programs via telephone, loudspeaker, or in person. Notify the College, Environmental Health and Safety Center, security office, and request support from off-campus.

4. Emergency Report Flow Chart



5. Emergency Telephone Numbers

1. Fu Jen Security Center (staffed 24 hours): ext: 2885 or 2902-3419
2. Environmental Protection, Health and Safety Center: ext. 3021
3. Sanitation Division: ext. 2995
4. Fu Jen Security Guard Office: ext. 2119, 2265
5. Xinzhuang Main Fire Department: 2998-5958
6. Xinzhuang Fire Station: 2992-4050
7. Fuying Fire Station: 2903-2119

Hospitals specializing in toxicology:

1. **Taipei Hospital**
Emergency Department: 2276-5566, ext. 2151, 2161, 2162
2. **Taipei Veterans General Hospital**
Department of Clinical Toxicology & Occupational Medicine: 28717121 or 28757525-821
3. **National Taiwan University Hospital**
Department of Emergency Medicine: 2312-3456, ext: 65629, 62667, 65666
4. **Chang Gung Memorial Hospital**
Division of Clinical Toxicology: 03-3281-200#2699、2799、2675

Chapter Five: Handling an Accident

1. Emergency and Preventive Measures

(1) Accidents

- (i) Evacuate all non-essential personnel.
- (ii) Quarantine the contaminated area and seal off entrances.
- (iii) Based on the situation, notify a hospital and/or fire department and request assistance.
- (iv) Ensure property safety equipment is prepared before entering the area to conduct rescue operations.
- (v) Remove injured personnel rapidly to a ventilated area or temporary rescue center. Evaluate their condition and provide first aid.

(2) Chemical leaks and fires

- (i) Based on the situation, notify a hospital and/or fire department and request assistance.
- (ii) Evacuate personnel from the area first; do not allow anyone to come in contact with

contaminated area.

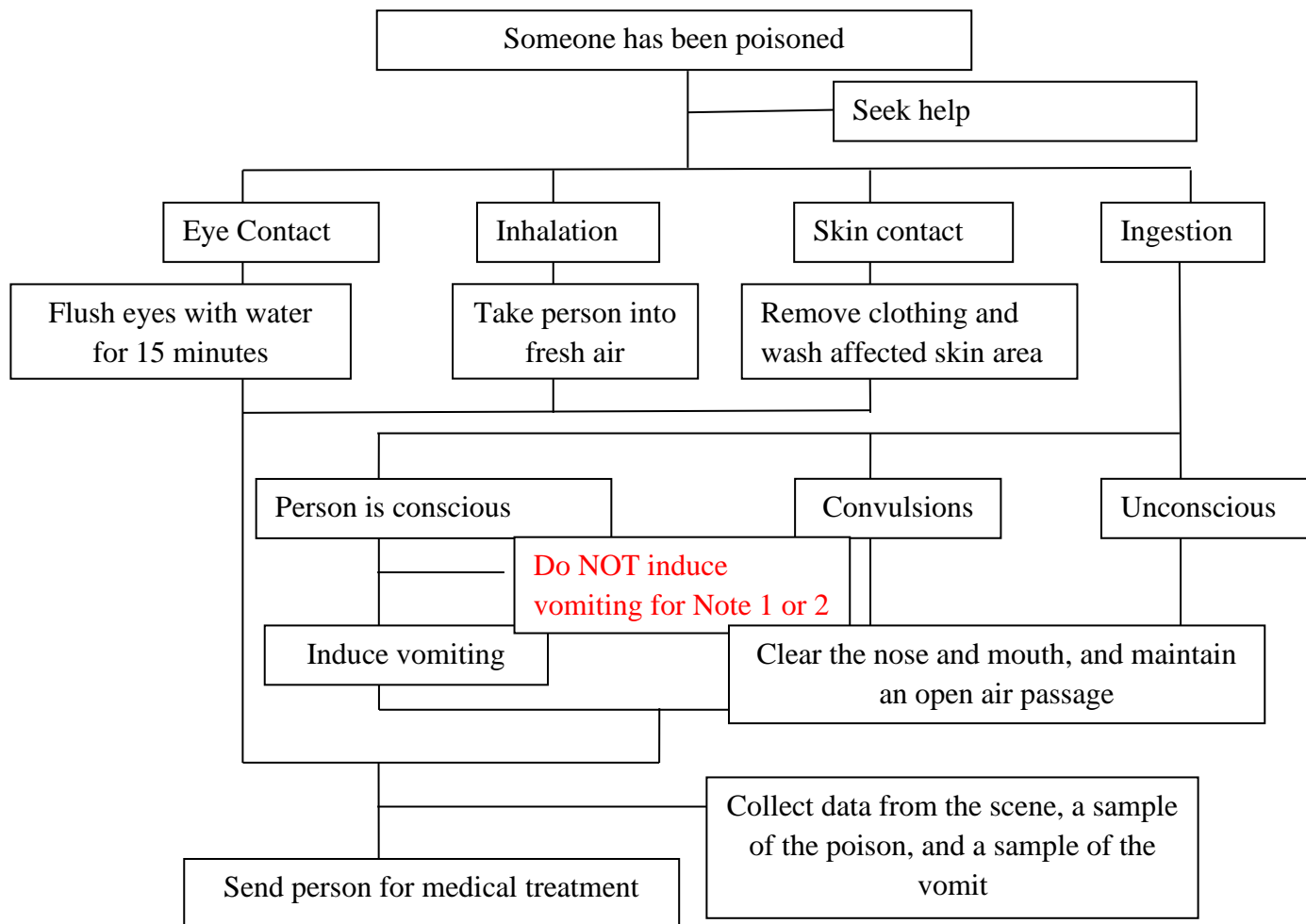
- (iii) Withdraw to a location upwind from the contaminated area. Avoid lowlands and areas with insufficient wind or air flow.
- (iv) Only properly trained personnel who are wearing the required safety equipment will clean up and handle the area.
- (v) Avoid letting the leak spread into a sewer or sealed space.
- (vi) Cut off and remove flammable sources. If it is possible to get close to the source of the leak, stop or reduce leakage.

2. Principles and Methods of Rescue

(1) Rescue Principles

- (i) Leave the source of the leak immediately. Whether a poison was inhaled, consumed, or made bodily contact, the injured person must first be brought to a location with fresh air or given oxygen.
- (ii) Remove contaminated clothing and footwear, and place them in the designated container.
- (iii) Clean up the poisonous substance.
- (iv) If an injured person is semi-conscious, place them in a recovery position. Do not give them food.
- (v) If an injured person is not breathing or their heart has stopped, administer CPR immediately.
- (vi) If an injured person vomits, tilt their head forward; if they are on their back, tilt their head to the side in order to prevent blockage of their air passage.
- (vii) Send the injured person to a hospital immediately and inform medical personnel of the toxic chemical substance involved.

(2) First Aid Flow Chart



Notes:

Do **NOT** induce vomiting under the following conditions:

1. The substance consumed is a strong acid or alkaline. (If ingestion is discovered quickly, the person should be given milk. If ingestion is not discovered right away, do not give the person any solids or liquids – send them immediately to a hospital).
2. Oil or petroleum preparations.
3. Antidote

Antidotes work in many different ways, but their goal is the same: to reduce the poisonous effects that toxins create in the body. For example, if a metal enters the body, an antidote will combine with the metal to create a soluble compound which can then be eliminated through the kidneys. However, it is important to remember that antidotes are a type of drug: they must only be used **after** consuming a toxic substance, **never** before.

Common Types of Toxic Poisoning and First Aid Procedures

(1) Corrosive acid:

1. Remove contaminated clothing and clean the area with water.
2. If ingested, do not induce vomiting. Give the person water to drink, but do not give a neutralizer.
3. Send for medical attention immediately.

(2) Corrosive alkaline

1. Remove contaminated clothing and clean the area with water.
2. Gargle water (if the alkaline was ingested through the mouth) to reduce irritation of the mucous membrane.
3. Do NOT induce vomiting, pump the stomach, or use an acidic neutralizer.
4. Send for medical attention immediately

(3) Hydrofluoric acid

1. Clean the contaminated area with water. Remove contaminated clothing.
2. Wipe calcium gluconate over all body parts that came in contact. Calcium gluconate will combine with the fluoride to form an insoluble calcium fluoride, thereby reducing the risk of the acid penetrating the body further.
3. Send for medical attention immediately.

(4) Carbon tetrachloride

1. Remove contaminated clothing. Use soap and water to clean body parts that came in contact.
2. If the carbon tetrachloride was ingested and the person is still conscious, induce vomiting.
3. Send for medical attention immediately.

(5) Methanol

1. If methanol was ingested within the past two hours and the person is still conscious, induce vomiting.
2. Send for medical attention immediately.

(6) Petroleum agents and polycyclic aromatic hydrocarbons

1. Remove contaminated clothing and wash contaminated skin with soap and water.
2. Send for medical attention immediately

Please refer to the MSDS for in-depth first aid steps. Decide emergency response procedures and rescue measures based on the route of exposure (i.e. ingestion, inhalation, skin contact, etc.).

(3) Handling the Situation Afterward

(i) Sterilization

- i. Decontaminate equipment and tools before returning to the Command Center from the site of the accident.
- ii. Follow the designated route to the decontamination area.
- iii. Wash protective equipment and instruments used in cleaning up the leak with large amounts of water.
- iv. Test the area to determine whether or not toxic residue remains.
- v. After everything is complete, remove protective clothing in the designated area

(ii) Place all protective equipment and contaminated objects into a leak-proof plastic bag or sanitizing waste receptacle for proper treatment once the accident has been dealt with.

- i. Maintain proper air flow in the area that experienced the leak; clean-up operations should be led by properly trained personnel.
- ii. Water used to extinguish a fire may contain toxins. Collect it and put it in the waste water management system.
- iii. Ventilate the area so that polluted air is collected in the off-gas treatment system.
- iv. Sprinkle a non-flammable dispersing agent over areas that came in contact with the leak, and then wash with large quantities of water and towels. Once emulsified, quickly clean it away.
- v. Fine sand may be used instead of a dispersing agent. Afterwards, use a spark resistant tool to shovel the sand into a bin and let the off-gas treatment system vacuum up the vapors.
- vi. Clean the area thoroughly with cleaning agents and water. Collect the water and handle it properly.

Sample Accident Reports/Announcements

1. Report Within Program:

Details to include: (1) who discovered the accident, (2) time, (3) location, (4) substance which is leaking, (5) current situation, (6) personnel involved/injuries, (7) other details.

Example:

“Hello! Department office? I’m first-year graduate student, John Smith. At around 10 o’clock I discovered a strange smell coming from Lab 119. I think it might be a chlorine leak. No one is hurt, but the leak seems to be spreading. Please send someone over as quickly as possible to investigate.”

2. Sample Evacuation Announcement

Details to include: (1) time, (2) location, (3) substance that is leaking, (4) current situation, (5) actions taken in response/evacuation route, (6) other details.

Example:

“Attention all staff and students! Attention all staff and students! A suspected chlorine leak was discovered in Lab 119 at approximately 10 o’clock. The leak appears to be spreading. Please close all windows and doors immediately, and take the nearest exit out of the building.”

3. Report to Neighboring Programs/Evacuation Announcement

Details to include: (1) the name and program of the person making the announcement, (2) the type of accident, (3) the severity of the accident, (4) weather conditions, (5) actions taken in response/evacuation route, (6) contact phone number, (7) other details.

Example:

“Attention! This is the Department of Food Science. I am staff member Larry Jones. There appears to be a chlorine leak coming from the food factory. The leak is spreading. The wind is currently blowing northeast and may reach the Department of _____. Please close all windows and doors immediately, and evacuate to the parking lot.”

(Repeat the announcement two to three times.)