

EMERGENCY RESPONSE MANUAL		
NYRSTAR CLARKSVILLE INC		
Department	Safety & Health	

R-Indicates Revisions

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I. Introduction

Nyrstar Clarksville Inc. takes a very responsible attitude towards the safety and health of its employees. Proper emergency planning and response are important elements of every Safety and Health Program, to help minimize employee exposure and injury. A number of regulations require that we develop and implement a written Emergency Response Plan to handle possible emergencies before it is necessary to perform emergency response operations. This plan applies to all operations where employees may encounter an emergency situation.

R- The Safety Department is responsible for developing and maintaining the facility's Emergency Response Manual. The plan is available for review, and a copy is kept at each department's main control room or Team Leader's office. It is also located in the Safety Office, and in the Document Management System.

In the event of an emergency situation, emergency responders such as fire, police, and the hospital are notified in the following manner:

R- The Security Office will contact the Emergency 911 Dispatch Center by telephone. The Dispatch Center will notify the following agencies and supply them with information from the above-mentioned form:

1. Montgomery County Emergency Management
2. Montgomery County Fire Service and the Clarksville Fire Department
3. Tennessee Emergency Management Agency
4. National Response Center (If Necessary)

All employees are to be trained in safe evacuation procedures. Refresher training is conducted whenever the plan is changed. In addition, the employee must know how to protect himself in the event of an emergency. The training will include the use of floor plans and workplace maps that clearly show the emergency escape routes included in the Emergency Response Manual. Color-coding the maps will aid the employees in determining their route assignments. No employee is permitted to re-enter the building until advised by his or her Team Leader to do so.

II. Evacuation Overview

The decision to evacuate is the responsibility of the Operations Manager, or their delegate. However, to ensure employee safety, it may be necessary for onsite first responders to recommend and initiate evacuation actions.

The decision to evacuate should be based on:

1. The time available for people to evacuate safely.
2. The type of incident and its characteristics and hazards.
3. The quantity of possible release and expected concentrations.
4. The estimated duration of the emergency.

Personnel conducting the evacuation should, at all times, exercise caution to prevent exposing themselves to potentially harmful conditions. Evacuations should be accomplished in the following manner:

1. If the incident involves a Department where evacuation plans have been developed, then the specific plan should be initiated.
2. If no specific pre-planning exists, the evacuation should generally be conducted as follows:
 - a. **R-** The use of two-way radios, telephones, word of mouth or air horns, should be used to alert employees.
 - b. Checking area-by-area using personnel on foot. Team Leaders shall obtain a head count after evacuation.

Note: Once the head count has been conducted the area Team Leader shall deploy personnel to each area entry point to restrict access to the area evacuated (Only in a real Event).

Individuals involved in response to an incident should implement control and recovery procedures consistent with their responsibilities and past emergency response training. Considerations should include:

1. All on scene actions must be consistent with the objectives of protecting the personal safety of all emergency responders and employees.
2. Response personnel should not enter the immediate vicinity of a hazardous material incident until a positive identification of the hazard has been made. Response personnel should assume the area to be highly dangerous.
3. If necessary, to preserve life, emergency actions to assist an accident victim(s) may be necessary, prior to initiating actions to control the incident. Such actions should be undertaken only if they do not unduly endanger emergency responders.
4. The Administration Conference Room will serve as the onsite command post. In case this room must be evacuated, the conference /Training room in the Laboratory Building will be used as the back-up command post. All communication and requests will go through the Command Post. The onsite command post should take actions to account for all emergency response personnel on site.
5. If the incident involves a chemical spill or release, actions should be taken to minimize personnel exposure and minimize the spread of contamination. Prior to departing an incident scene, all equipment and personnel must be decontaminated.
6. Containment methods for spills may include the use of dikes, pits, absorbent materials, foam material, and neutralizing agents such as lime or Soda ash. The containment effort should be directed towards limiting the potential for contamination, environmental impact and injury.
7. Control of an incident will often involve the termination of possible releases through methods such as closing valves, plugging holes, or transferring the chemical from one container to another. The use of water spray to cool exposures and protect personnel will be critical in many responses.
8. If a fire does not exist, but the potential for ignition exists, all sources of ignition should be extinguished in the affected areas.

III.Total Plant Evacuation

A total plant evacuation is an evacuation involving personnel from all areas of the plant. It may be caused by a fire, leak, accident or natural disaster.

Implementing a Total Plant Evacuation:

1. The General Manager or their delegate may choose to evacuate the entire plant.
2. **R-** Telephones and two-way radios should be used to alert all personnel of the evacuation. Security may also use the plant emergency vehicle while department personnel may utilize their two-way radios and personal contact to alert other personnel of the evacuation.
3. All personnel, upon hearing the alert, should use the nearest exit to gain access to the roadways.
4. Once personnel are on the roadways, they should proceed quickly to the employee parking area and wait for further instructions.

IV. Department Evacuations

Implementing Department Evacuations

1. The area Team Leaders has the responsibility for evacuating his/her area. Also, he/she needs to help assist everyone out of the area and to a safe meeting place.
2. Personnel may elect to go ahead with an evacuation should an extreme emergency occur, and their Team Leader is absent.
3. **R-** Telephones, two-way radios and air horn should be used to alert the personnel of an evacuation.
4. Personnel, upon hearing the alert should follow procedures outlined in Section II, Specific Department Evacuations.
5. All Team Leaders must account for their personnel, when everyone has reached the safe meeting place. The Team Leader must take a head count and call in a situation report to Central Control Room.
6. If the safe meeting zone is in danger, personnel should proceed quickly to the employee parking area as the back-up safe meeting zone.
7. If the entire plant is selected to be evacuated after initial Department evacuations, all non-critical personnel should go to the employee parking lot.

Specific Department Evacuations

A. Roaster Weather related evacuation

1. Upon decision to evacuate the area, non-critical personnel should exit through the west door of the Roaster Control Room.
2. The personnel exiting the Roaster Dome area first attempt to use the stairway on the south side of the control room.

3. **R-** After exiting the building, proceed to the I/A Room at the base of the Roaster. The Acid Plant Operators and the Barge Point Operators are also to proceed to the I/A Room if time permits.
4. **R-** The Team Leader must make an accurate head count of all personnel. Under no circumstances should personnel re-enter the area without permission from the Team Leader, or the department Superintendent.
5. For Department evacuation (non- weather) all personnel assemble east of the trailer and await further instructions.

B. Oxide Wash & Material Handling

1. Upon decision to evacuate the department (non- weather related) all personnel are to evacuate the area and assemble at the east side of the Roaster Acid trailer and await further instructions.
2. **For Weather Related Emergencies** such as a tornado all Personnel will proceed to the Oxide Wash MCC room.

C. Leach Filter Building – Upper Level

1. Upon decision to evacuate the area, non-critical personnel should proceed in an orderly fashion to the stairway on the west wall just outside of the building.
2. If personnel are unable to go to the stairway on the West wall; personnel should use the catwalk going to Central Control to gain access to the stairway on the North side of Central Control.
3. **R-** After reaching the roadway, personnel should then go to the north east corner of the Central Control Building at the Cadmium Plant and wait for further instructions.
4. **R-** During a tornado alert or earthquake warning, conduct a head count and proceed to the chiller room at the Cadmium Plant.

D. Leach Filter Building – Lower Level and the J-Vap Building

1. Upon decision to evacuate the area, non-critical personnel should proceed in an orderly fashion to the Northeast corner of the Central Control Building.
2. Wait for further instructions. After a head count during a tornado alert or an earthquake warning, proceed to the chiller room at Cadmium Plant.

Central Control

R- In the event it becomes necessary to evacuate Central Control, all personnel should immediately exit the building and report to the Northeast corner (ground level) area for a head count. After a head count during a tornado alert or an earthquake warning, proceed to the chiller room at Cadmium Plant.

E. Purification Area – Upper

1. Upon decision to evacuate the area, non-critical personnel should proceed in an orderly fashion to one of the stairways to the North, West, or South of the Purification Building.
2. If these stairways are unable to be used, then the catwalk connecting to central Control will be used.
3. Once on the roadway, personnel should go directly to the Northeast Corner of the Central Control Building and wait for further instructions. If weather related, proceed to the chiller room in the Cadmium Plant.
4. When a **hydrogen gas alarm** goes off inside the Purification area, the Operator should notify all personnel in the area to evacuate at once. All personnel should report to the Northeast Corner of the Central Control Building wait for further instructions and have the Leach & Purification Team Leader help keep all unauthorized personnel out of the area until the hydrogen gas has cleared.

F. Cadmium Plant – Upper

1. Upon decision to evacuate the area, non-critical personnel should proceed in an orderly fashion to one of the stairways to the South side of the building.
2. If these stairways on the South side are unable to be used, one of the stairways on the North side of the building should be used.
3. Once personnel are on the roadway, personnel should go directly to the Northeast Corner of the Central Control Building and wait for further instructions. In case of a tornado alert or an earthquake, report to the chiller room located at the lower level of Cadmium.
4. When a **hydrogen gas alarm** goes off inside the Cadmium plant, the Operator should notify all personnel in the area to evacuate at once. All personnel should report to the Northeast Corner of the Central Control Building wait for further instructions and have the Leach & Purification Team Leader help keep all unauthorized personnel out of the area until the hydrogen gas has cleared.

G. Cadmium Plant - Lower

Upon the decision to evacuate the area, non-critical personnel should proceed in an orderly fashion to the Northeast Corner of the Central Control Building and wait for

further instructions. In the event of a tornado warning, all personnel will proceed to the Chiller Room, located in the Furnace Area.

H. Metals Recovery

Upon the decision to evacuate the area, non-critical personnel should proceed in an orderly fashion to the Northeast corner of Central Control. If a tornado alert or an earthquake proceed to chiller room at Cadmium Plant.

I. Cell House – Upper

1. Upon decision to evacuate the area, an announcement will be made on the gaitronics and radio followed by a solid tone on the air horn alarm. Non-critical personnel should proceed in an orderly fashion to one of the following stairways:
 - A. East side of Cell House
 - B. North of Cell Room
 - C. Northwest corner of anode cleaning area
 - D. Southwest corner of Cell Room
 - E. South of stripping machines
2. Once on the roadway, all personnel should proceed to the center of the open field just east of the Cell House on the gravel walkway and wait for further instructions.
3. **For Weather Related Emergencies** such as a tornado or severe thunderstorms all Personnel will proceed to the room at the south west end of the old maintenance shop on the ground level using interior doorways as much as possible. The alarm will be an intermittent air horn for weather related emergencies, with gaitronics and radio announcement.

J. Cell House – Lower

1. Upon decision to evacuate the area, non-critical personnel should proceed in an orderly fashion to one of the numerous exits in the lower level of the Cell House.
2. Once on the roadway, all personnel should proceed to the center of the open field on the gravel walkway, just east of the Cell House and wait for further instructions.
3. **For Weather Related Emergencies** such as a tornado or severe thunderstorms all Personnel will proceed to the room at the south west end of the old maintenance shop on the ground level using interior doorways as much as possible. The site weather alarm will be used for weather related emergencies, with gaitronics and radio announcement.

K. Cast House

1. Upon decision to evacuate the area, non-critical personnel should proceed in an orderly fashion out of the nearest doorway.
2. Once personnel reach the roadway, they should proceed to the South end of the open field just east of the Cell House.
3. Once at the open field, wait for further instructions.
4. **For Weather Related Emergencies** such as a tornado or severe thunderstorms all Personnel will evacuate to the Cast House restroom.

L. Lab Area

1. **For Weather Related Emergencies** such as a tornado or severe thunderstorms all Personnel will evacuate to the Lab restroom.
2. Upon the decision to evacuate the area, non-critical personnel should proceed to the nearest of the three following exits:
 - A. East end door of hallway.
 - B. West end door of hallway.
 - C. Middle door facing South in hallway.
3. Once on the roadway, personnel should proceed to the open field between the Lab building and the HR building.
4. Once at the open field, personnel should wait for further instructions.

M. Maintenance Building – Upper Floor- Engineering

1. Upon decision to evacuate the area, non-critical personnel should proceed in an orderly fashion down the West stairwell and out the front West facing doors
*In the event of tornado or extreme weather all personnel will proceed to the lower level hall and training room.
2. Upon evacuation from the building personnel will meet in at the Northeast side of the building where the roads intersect for accountability.
3. Personnel should wait for further instructions.

N. Maintenance Area – Lower

1. Upon decision to evacuate the area, non-critical personnel should proceed in an orderly fashion out the East side doors or the North end doors of the garage/shop area
*In the event of tornado or extreme weather all personnel will proceed to the lower level hall and training room.
2. An Air Horn will be used as the evacuation signal in the Maintenance Building. Personnel needing to signal the evacuation of the building should proceed to the nearest air horn station (Main Shop by door leading into main office area, or in

- the Mobile Shop located outside door to South Crew's Team Leader's Office) any person passing the 2nd Air Horn will remove it from its case and sound it as well.
3. Upon evacuation from the building personnel will meet in at the Northeast side of the building where the roads intersect for accountability. Team Leaders will be responsible for assigning one person to act as a guard for their area of the building to prohibit unauthorized entry into the building. The North Crew will secure the East Side of the building, South Crew will secure the West Side and the Support Crew will be responsible for the South Side. Team Leaders will also perform accountability for their personnel.
 4. Personnel should wait for further instructions.

O. Warehouse and Electric/Controls Area

1. Upon decision to evacuate the area, non-critical personnel should proceed in an orderly fashion out the South side doors to the unloading dock.
*In the event of tornado or extreme weather all personnel will proceed to the lower level hall and training room of the Maintenance building.
2. Once at the unloading dock, personnel should then move to the area southeast corner of the Lab Building.
3. Personnel should wait for further instructions.

P. Human Relations Building

1. Upon decision to evacuate the area, all personnel should proceed in an orderly fashion out the North door, South door, or the West door.
2. Once outside, personnel should proceed to the open field between the Lab building and the HR building.
3. Personnel should wait for further instructions.
4. **For Weather Related Emergencies** such as a tornado personnel are to evacuate to the men's and women's restrooms.

Q. Change House

1. Upon decision to evacuate the area, all personnel should proceed in an orderly fashion out the exit.
2. Once leaving the building, personnel should move to the employee parking area.
3. Personnel should wait for further instructions.
4. **For Weather Related Emergencies** such as a tornado personnel are to report to the men's and women's restrooms.

R. Administration Building

1. Fire.

- A. Upon the decision to evacuate the area, all personnel should proceed in an orderly fashion out the Northeast end door, Southwest door, or the Northwest middle door.
 - B. Upon leaving the building personnel should move to the employee parking lot.
 - C. Personnel should wait for further instructions.
2. Inclement weather (Tornados)
 - A. During inclement weather, i.e., Tornado, all personnel should proceed in an orderly fashion to the most interior parts of the building away from windows.
 - B. Personnel will gather in the Vault and Bathrooms, ensuring they have in their possession a radio for communicating and a flashlight.
 - C. Personnel should wait further instruction.

V. Emergency Shutdown Procedures

In the event of an emergency, guidelines have been established by each department head for their specific area shutdown. In an emergency, only key personnel designated by the department Superintendent will stay behind and perform emergency shutdown procedures. The use of respirators may be necessary for these procedures and should be available at all times. This section contains information strictly for Emergency Shutdown, and includes:

1. Identifying the operation.
2. Identifying the personnel involved.
3. Special protective equipment that is needed.
4. Identifying situations that would require immediate evacuation.

Guidelines for emergency shutdown procedures:

A. Roaster:

1. The Acid Operator is to leave the area immediately.
2. Process Control Leader and the Boiler Operator should stay and shutdown the plant.
*Actual shut down procedures used will be dependent upon current conditions and actual reasons for shut down. The Process Control Leader will utilize the appropriate Check Sheet based on the situation.
3. The remaining personnel should have respirators on or close at hand.
4. If the following occurs, immediate evacuation is required:
 - A. Oxygen fire or explosion.
 - B. Boiler explosion.
 - C. Extreme SO₂ gas discharge.

B. Oxide Wash:

1. Oxide Wash operator should notify the Roaster Department PCL of the situation then proceed to shut down the Oxide Wash plant. All other personnel working in the area is to leave the area immediately.

C. Material Handling:

1. Material Handler Operator is to notify the Roaster Department PCL of the situation, leave the water treatment plant in automatic, and then leave the area.

D. Water Plant:

1. Water Production. Maintenance personnel should evacuate the area immediately.
2. Personnel involved in shutting down the Water Plant, is the Water Treatment "A" Operator.
3. Any emergency shutdown operations that must be performed within the area may require the use of a respirator.
4. Situations that would require immediate evacuation are:
 - A. Extreme SO₂ gas discharge from the Acid Plant.
 - B. Chlorine gas leak from Water Plant.
 - C. Train or truck accident involving a flammable gas or liquid or hazardous chemicals.

E. Purification:

1. Purification, Heat Exchanger. Operators and Maintenance personnel are to evacuate this area immediately.
2. Shutdown will require the Process Control Leader and Team Leader.
3. Situations that would require immediate evacuation are:
 - A. Extreme SO₂ gas discharge of the Acid Plant.
 - B. Chlorine gas leak from Water Plant.
 - C. Train or truck accident involving a flammable gas or liquid or hazardous chemicals.
 - D. Arsine or Stibine gas production in Purification.

F. Metals Recovery:

1. Shutdown of Metals Recovery. Maintenance personnel should evacuate immediately.
2. The personnel involved in shutting down Metals Recovery, is the Metals Recovery Operator.
3. Situations that would require immediate evacuation are:
 - A. Extreme SO₂ gas discharge of the Acid Plant.
 - B. Chlorine gas leak from Water Plant.

- C. Train or truck accident involving a flammable gas or liquid or hazardous chemicals.
- D. H₂S gas leak from the bottom of the clarifier.

G. Cadmium Plant:

1. Cadmium plant operation. All Cadmium Plant personnel including any maintenance personnel should evacuate immediately.
2. Personnel involved in shutting down the Cadmium Plant, is the Shift Operator.
3. Any emergency shutdown operations that must be performed within the area may require the use of a respirator, to include:
 - A. Closing all incoming lines by closing valves.
 - B. Closing all outgoing lines by closing valves.
 - C. All electrical equipment shut off and the 800 AMP breakers opened.
 - D. Water supply shut off.
 - E. Cell room bleed system closed.
4. Situations that would require immediate evacuation are:
 - A. Hazardous chemical spill.
 - B. Train or truck tanker accident.
 - C. Roaster gas malfunction.
 - D. Cadmium Plant Arsine, Stibine gas incident.

H. Cast House:

1. Critical Equipment: Cast Line, Zinc Dust, and all molten metal pumps.
2. Personnel involved with shutting down the Cast House, are the Zinc Dust Operator, Cast Line Skimmer, Ajax Furnace Operator, and the Team Leader.
3. Any emergency shutdown operations that must be performed within the area may require the use of a respirator.
4. Situations that would require immediate evacuation:
 - A. Major leak in Propane tank.
 - B. Structural fire.
 - C. Train or truck accident involving a flammable gas or liquid or hazardous chemicals.
 - D. Chlorine gas leak from Water Plant.

I. Cell House:

1. Critical Equipment: Transformer, Rectifier, and High-Pressure system will require a shutdown.
2. The Team Leader and the A Operator are to carry out shut down operations.
3. Situations that would require immediate evacuation are:

- A. Serious structural fire
- B. Chlorine gas leak from the Water Plant.
- C. Train or truck accident involving a flammable gas, liquid or hazardous chemicals.

J. Leach:

1. Leach Operation. Leach Operators and Maintenance personnel should evacuate the area immediately.
2. Personnel involved in shutting down the Leach Plant are the Team Leader and the Process Control Leader.
3. Situations that would require immediate evacuation are:
 - A. Extreme SO₂ gas discharge of the Acid Plant.
 - B. Chlorine gas leak from the Water Plant.
 - C. Train or truck accident involving a flammable gas, liquid or hazardous chemicals.

VI. Fire Response Procedures

1. Upon the discovery of a fire by plant personnel, the person discovering the fire should tell nearby personnel that there is a fire and that help is needed.
2. The person should then decide if the fire is small enough to be controlled or extinguished with a nearby extinguisher. If the person believes that the fire can be controlled or extinguished with a nearby extinguisher, without the risk to his personal safety, then he shall proceed to extinguish the fire. After extinguishment, he should report the incident to his/her Team Leader for investigation.
3. If the fire is determined to be uncontrollable or remains a blaze after initial extinguishment, then the person should attempt to alert other plant personnel and security.
4. The Gaitronics system should serve as a means of alerting and communicating information during an emergency. The emergency message should be repeated three times and they also need to alert the security of the exact location and nature of the emergency. All personnel should stop the use of Gaitronics upon hearing an emergency alert.
5. Plant Security, upon hearing the alert should answer and collect information from the person needing help. Security will request assistance from the appropriate outside emergency agencies. This will be completed by calling 911 and reporting the need for emergency assistance. Security shall immediately notify the SHEQ Manager or their delegate of the situation.
6. Security shall direct the emergency response units to the emergency scene.

7. In the event that the SHEQ Manager or their delegate is offsite, he/she should make the decision to evacuate in accordance with the emergency evacuation plans upon notification of the emergency. He may advise the guard, via telephone or other means, to initiate evacuation procedures based on the information that he/she is given.
8. The plant's SHEQ Manager, upon arrival, should oversee and advise all offsite emergency services while on Nyrstar Clarksville Inc. property. This is to ensure the maximum safety of ALL persons onsite. The SHEQ Manager should also direct plant personnel to assist or evacuate as needed.
9. If a fire sprinkler system is activated during a fire involving an area that has sprinkler protection, the following actions are to be immediately implemented:
 - A. The Water Plant Operator will immediately ensure that the Emergency Diesel Fire Pump is operating to supplement the existing electrically powered process water pumps. If the pump has not automatically started, the Operator will initiate a manual start of the diesel pump.
 - B. The Maintenance Shift Mechanic will report directly to the Post Indicator Valve that controls the water flow to the involved system. The Mechanic will ensure that the valve is fully opened and that it does not get closed until the fire is completely extinguished. The valve will be closed only at the direction of the Senior Emergency Response Official.
 - R- C. Termination of the emergency scene should be done in conjunction with the consent of both the plant's SHEQ Manager and the offsite Emergency Services Commander. Only then should the personnel be free to return to their workstations and operations resumed.

VII. Natural Disaster Plans

A. Definition: "Earthquake"

"Most earthquakes are caused by the movement of the earth's crust as the rock structures adjust to Tectonic forces. Many parts of the United States are susceptible to earthquakes." The Tennessee region is susceptible to earthquakes because of the New Madrid Fault Zone. The nearest the fault zone that gets to Nyrstar Clarksville Zinc Plant is approximately 60 miles west of Murray, KY.

B. Preparing for an Earthquake

1. Personnel should secure tall lockers and cabinets to walls.
2. Loose items such as tools should be secured in a toolbox.
3. Overhead objects should be secured to prevent falling.

C. During an Earthquake

1. Personnel should take cover under heavy, supportive objects such as tables and desks.
2. Critical personnel should attempt to shut down all operations as soon as possible.
3. All non-critical personnel must evacuate the entire plant. See "Total Plant Evacuation".
4. Attempts should be made to turn off all electricity and cut off the flow of hazardous liquids and gases.
5. Team Leaders should take head counts of their personnel and call in situation and damage reports to the Guard Office or to Central Control.
6. Due to the possibility of a shortage of emergency medical personnel off-site, Montgomery County Emergency Medical Services must be notified of the number of people hurt and the extent of the injuries in order to allocate proper resources. The same applies to Fire Services.
7. Keep everyone evacuated and prepare for aftershocks.
8. Inspect buildings and structures for structural weakness before allowing personnel to return on-site.
9. Keep personnel away from buildings that appear or are suspected of being weak.
10. Be aware of aftershocks and govern work accordingly.
11. Stay away from ruptured process lines, gas lines, power lines, furnace areas, etc., until inspected by plant officials.
12. Use telephones and Getronics system only for reporting emergencies.

D. Earthquake Considerations

1. Communications damage/outage.
 - A. Radio Repeater units and towers knocked out.
 - B. Power to Radio units - base stations.
 - C. Telephone outage.
2. Transportation.
 - A. Bridge collapse/damage.
 - B. Road damage.
 - C. Power lines down on road.
 - D. Air or water only safe route.

3. Electricity.
 - A. No heat in winter.
 - B. No lights.
 - C. Electronic gates down.
 - D. Sump pumps inoperable.
4. Survival.
 - A. Food storage.
 - B. Shelter/heat provisions in winter.
 - C. Medical supplies.
 - D. Isolation from Clarksville.

E. Definition: “Tornado”

A tornado is a "wind spout spawned by severe thunderstorms and hurricanes. Winds may approach 300 mph. The usual direction of travel is Southwest to Northeast."

F. Definition: “Tornado Watch”

A Tornado Watch is issued any time the atmospheric conditions are favorable for the formation of a tornado.

G. What to do when a Tornado Watch is issued:

1. Issued when conditions are favourable for a tornado to form
2. Security will notify all department control rooms and broadcast on all radio channels.
3. If any tornadoes are sighted, report to Security

R- H. What to do when a Tornado Warning is issued:

1. If a Tornado Warning is issued by NOAA or a Tornado is seen in the following locations and the projected track threatens Nyrstar Clarksville:
 - Clarksville
 - Cunningham
 - Palmyra
 - Shiloh
 - Woodlawn
 - Cumberland Heights

2. Safety Department will notify Security.
3. Security will activate the emergency weather alert siren for two minutes (Long Wail). This will be repeated every ten minutes until the storm has passed. Personnel hearing the alert should attempt to alert co-workers that may not have heard the alert.
4. Personnel will report to designated shelters immediately.

I. After a tornado:

1. Begin search and rescue operations for missing and injured personnel.
2. Personnel should be designated to prepare damage reports, initiate repairs and inspect for structural damages.
3. Inspect plant for fire, fire protection impairments, water supply contamination, etc.
4. Temporarily cover building openings to lessen water and rain damage.
5. Start salvage operations.
6. Inspect for electrical problems.
7. Clear roof drains to prevent further damage.
8. Establish an emergency non-smoking policy to prevent fires and/or explosions.

J. Considerations for Tornado Awareness:

1. Power outages.
2. Water outage/contamination.
3. Process damage.
4. Communication damage.
 - A. Radio repeater units and towers knocked out.
 - B. Power out to some base units.
 - C. Telephone line damage.

K. Lightning :

1. Area Team Leaders have the responsibility for lightning safety in their areas. He/she will ensure that personnel in the departments go to a safe place, such as an indoor location or a closed – cab vehicle with rubber tires when lightning is in the area. If the sound of Thunder is heard as a rumble, then lightning is at least several miles away. If the Thunder is heard as a crack or boom, the lightning is nearby and personnel should go immediately to a safe place.

VIII. Arsine/Stibine Gas Procedures

Hydrogen and some poisonous gases, Arsine and Stibine, are generated in the Purification reactors. These gases are normally safely vented through the tank stacks. The quantities are

small and do not create a hazard when diluted and mixed with air. The main reactors are the three hot purification tanks 58, 59, and 60, the copper cadmium repulp tanks 118, 119, 120, and cobalt re-pulp tanks 80, 180, 181, and 182. These tanks are equipped with large diameter natural draught ventilators. This is so that in the event of a power failure the tanks will continue to vent to atmosphere.

Under normal conditions there are no poisonous gases present in purification work areas. In fact, no poisonous gases have been detected since start up. The greatest chance of poisonous gases being generated outside the reactors is in the sumps (if the three ingredients, arsenic/antimony, zinc dust, and acid are present together). The sump area is open and well ventilated, however, if poisonous gases are generated, we have arsine/stibine detection papers located at the locations listed below. These papers are white and if any arsine/stibine gas is present they turn brown.

A. Arsine/Stibine Paper Stations:

1. Purification

<u>Station No.</u>	<u>Location</u>
1.	Pumps 07032/07033
2.	Pumps 07081/07082
3.	Top of 07031
4.	Top of 07080
5.	By condensate lines going to cold US Filters
6.	Above Tank 07058
7.	Doorway between filter press room & US Filter room
8.	By 07110 filter
9.	Above Tank 07182
10.	Bottom of Tank 07119
11.	Top of 07110 filter
12.	Top of Tank 07132
13.	Top of Tank 07009
14.	Between tanks 07013 & 07014

2. Cadmium

<u>Station No.</u>	<u>Location</u>
1.	Between tanks 14051/14054 top floor by charging bays
2.	Between tanks 14054/14057 top floor by charging bays
3.	Between neutralization & copper precip. tanks top floor
4.	Beside cementation tank doors

All employees should be familiar with these locations and check them regularly when passing by. The papers are changed at the beginning of each shift and checked by the supervisor. A sample of the arsine papers is also tested at the Lab each week to make sure they are sensitive.

B. Procedure if a Brown Paper is Detected*

1. Leave the area immediately.
2. **R-** Contact Central Control and have the controller notify personnel in the area to evacuate (e.g. Cadmium or Purification)
3. Report to your Team Leader.
4. The Team Leader is to immediately:
 - A. Post people around the contaminated area but well away from it, 20 yards to stop people from entering the area.
 - B. In the event of any papers turning brown ensure that all personnel are clear and out of the area.

This Procedure shall be Exercised Annually

C. Symptoms of Arsine/Stibine Poisoning:

1. The characteristic features of acute arsine poisoning are abdominal pain, bloody urine, and yellow discoloration of the skin. Initial symptoms are headache, malaise, weakness, dizziness, difficult breathing, nausea, and vomiting.
2. The present Occupational Safety and Health Administration (OSHA) standard for occupational exposure to arsine is 0.05 parts per million as a time-weighted average in any eight-hour work shift of a 40-hour work week.
3. The present OSHA standard for occupational exposure to stibine is 0.1 part per million in any eight-hour shift of a 40-hour work week.

IX. Bomb Threat Preplans

This policy is designed to guide Plant personnel, as well as security personnel contracted by Clarksville Inc. in the event of a bomb threat.

There are two main explanations for a bomb threat:

1. The caller has definite knowledge or believes that an explosive device is placed on-site, and he wants to minimize injury to plant personnel and property.
2. The caller wants to create panic and confusion, thus disrupting plant operations.

The purpose of planning for bomb threats is to reduce the chance of injury to plant personnel in the event of an actual bomb. Second, the plan should significantly reduce disruptions in plant operations due to bomb threats and associated panic.

R- The bomb threat plan should affect the entire plant. The contents of the plan should be restricted to management, staff personnel, security personnel, and search team members.

A. Steps to Handling Bomb Threat Call

1. Keep Calm.
2. Ask caller to repeat message and record all information given by caller.
3. Follow and record information in the checklist (see appendix A).
4. Ask for location and time of detonation of bomb.
5. Inform the caller that the detonation of a bomb would injure and/or kill INNOCENT people.
6. Pay attention to background noises over the phone while caller is on the line. Also, keep him on the line for as long as possible in order to enable a trace.
7. Pay attention to the caller's voice, i.e. sex, accents, speech difficulties, etc.
8. Notify Nyrstar Clarksville Zinc Plant's Security immediately after caller hangs up.

B. Steps and Considerations after the Call

1. After security is notified, they should immediately notify the Montgomery County Sheriff's Office and contact the SHEQ Manager or their delegate.
2. **R-** Security should tighten plant security and increase perimeter patrols until the threat has safely passed.
3. **R-** The plant's General Manager should make the evacuation decision based on information received from the caller. If an evacuation is needed, the steps should be followed for "total" or "partial" evacuation of the plant as contained within the emergency response plans.

Clarksville Site Bomb Threat Checklist Appendix A

WHEN is the bomb set to go off?	
WHERE is it?	
WHAT kind of bomb is it?	
WHY are you doing this?	
WHO are you?	
DID YOU set the bomb yourself?	
Call received by	
Call received at (location and number)	

Date/time call received	
What did the caller say, threaten or demand – use his/her exact language as far as possible	
Did the caller say he/she would call again	
If so when	
About how long was the call?	
About how old was the caller?	
Male/Female	
Were there any speech characteristics or an accent noted?	
If so, what were they?	
Were there any identifiable background noises?	
If so, can you describe them?	
Was the Caller ...	Calm Excited Intoxicated Angry Rational Irrational Other
SIGNATURE	
DATE	

X. Accountabilities

The SHEQ Manager is accountable for this Manual.