Confined Space

and

Permit-Required Confined Space

Program

For Nanogate North America

Permit-Required Confined Space Entry Program

General Company Policy

Nanogate North America LLC is committed to creating a safe workplace for all our employees. Part of their safety requires an effective Confined Space Program. We strive for clear understanding of Confined Spaces, safe work practices and involvement from every level of the company.

The purpose of this program is to inform interested persons, including employees that Jay Industries, Inc. is complying with the OSHA Confined Space Standard, Title 29 Code of Federal Regulations 1910.146. We have determined that this workplace needs written procedures for the evaluation of confined spaces. When permit-required spaces are identified, we have developed and implemented a permit-required confined space entry program. This program applies to all work operations at Jay Industries, Inc. where employees must enter a permit-required confined space as part of their job duties.

Definition of a confined space

Confined space is large enough and configured such that an employee can bodily enter and perform work.
The space has limited means of entry (access) and exit (egress), which means you need your hands or contort your body to enter the space.
The space is not designed for continuous employee occupancy.

Definition of permit required confined space

Contains or has the potential to contain a hazardous atmosphere.
Contains a material with the potential to engulf someone who enters the space.
Has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section.
Contains any other recognized serious safety or health hazard.

Roles and Duties

The EHS Director is responsible for the administration of the Permit-Required Confined Space Program, including establishing, reviewing and updating the program, as required. A copy of the written plan may be obtained by contacting the EHS Department, or by printing this plan from the Nanogate North America Intranet Training Website. We encourage suggestions or ideas for improvement and these may be forwarded to the EHS Department.

The Maintenance Manager or Supervisor in each plant is responsible for coordinating and administering the Permit Required Confined Space program in their plant.

Under this program, permit-required spaces at all Nanogate North America divisions are identified and training is provided for our employees according to their responsibilities in the permit space. These employees receive instructions for safe entry into our specific type of confined spaces, including testing and monitoring, appropriate personal protective equipment (PPE), rescue procedures, and attendant responsibilities.

This program is designed to ensure that safe work practices are utilized during all activities regarding the permit space to prevent personal injuries and illnesses that could occur.

Hazard Evaluation for Permit Spaces

To determine the locations of permit-required confined spaces within the Jay Industries, Inc. facilities, either the EHS Director, Maintenance or both will conduct a hazard evaluation of each workplace. This evaluation provides the information necessary to identify the existence and location of permit-required confined spaces which must be covered by the Permit-Required Confined Space Entry Program. This written hazard evaluation is kept in the EHS office.

Preventing Unauthorized Entry

To prevent exposed employees from accidentally entering a permit space, supervisors or their designees will conduct on the job training to inform both authorized and unauthorized employees about confined spaces. Confined spaces will be labeled with signs.

Safe Permit Space Entry Procedures

The Maintenance or Shift supervisor is the Entry Supervisor responsible for authorizing entry and issuing entry permits for work in permit spaces. The files of permits and related documents are maintained by the Maintenance Department in each plant.

To prepare, issue or cancel entry permits, the following elements must be addressed:

- The reason for entry.
- The work to be performed.
- The persons entering the space.

The names of employees who have current authorization to work in or near Permit Required Confined Spaces are kept in this file. This file also includes a list of work activities expected to be performed such as cleaning, maintenance, and repair.

Pre-Entry Evaluation

Before authorized workers are allowed to enter a permit required confined space, the conditions must be evaluated and determined safe for entry. Any employee who enters the space has the right to observe the pre-entry testing and any additional testing. The authorized may also request a re-evaluation of the space if they feel that the evaluation was not adequate.

Alternate Entry Evaluation

Our company follows the procedures to evaluate each permit space before entry according to 1910.146(c) (5) (ii) (C). This includes testing the internal atmosphere with a calibrated direct-reading instrument for oxygen content, flammable gases and vapors, and potential toxic air contaminants. We also periodically test the atmosphere of the space to ensure that the continuous ventilation is preventing the accumulation of a hazardous atmosphere. Periodic test results are filed in the Maintenance Department.

Certification

Alternate Entry Procedure Certification

According to 1910.146(c) (5) (ii) (H), our company verifies that the space is safe for entry and that the pre-entry measures required by 1910.146(c) (5) (ii) have been taken, through a written certification that contains the date, location of the space, and signature of the person providing the certification. The Maintenance Department or Shift supervisor is responsible for verifying these procedures. The certification is made before entry and is available to each employee entering the space.

Reclassification as Non-permit Space Certification

According to 1910.146(c)(7)(iii), our company documents the basis for determining that all hazards in a permit space have been eliminated, through a certification that contains the date, location of the space, and signature of the person making the determination. The Maintenance Department or Shift supervisor in the department where the confined space is located is responsible for documenting this information. The certification is available to each employee entering the space. These records are filed in the Maintenance Department.

Equipment

Appropriate personal protective equipment is available to any employee who works in a permit required confined space. According to 1910.146(k)(3)(i), each authorized entrant will use a chest or full body harness with a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head, or at another point which presents a profile small enough for the successful removal of the entrant. Wristlets may be used instead of the chest or full body harness if it is demonstrated that the use of a chest or full body harness is not feasible or creates a greater hazard and that the use of wristlets is the safest and most effective alternative.

All equipment must be maintained in excellent working condition. Entrants will be trained in the proper usage and maintenance of their equipment, including that used for personal protection.

A pre-entry inspection of equipment being used by entrants will be performed by the supervisor issuing the permit.

Duties: Authorized Entrants

Those persons who have completed the training and are authorized to enter Permit Required Confined Spaces are assigned specific duties and responsibilities that they must perform, such as required maintenance, cleaning, equipment repairs, and removing parts that have fallen off the conveyor. The elements covered in the training program for authorized entrants include:

- Why a permit is necessary and how to obtain a permit.
- A review of the Nanogate North America Permit-Required Confined Space Entry Program.
- Identifying hazards within the confined space and protecting themselves from those hazards.
- Proper PPE use and the PPE limitations.
- Proper use of the atmosphere testing equipment and its limitations.
- Knowledge of the conditions within the confined space.

Duties: Attendants

All Shift Supervisors, Department Supervisors, Maintenance Employees, Authorized Entrants and Authorized Attendants will be trained on their duties for permit required confined spaces.

Those persons who have completed the Confined Space Training Program and have been designated as Attendants are assigned specific duties and responsibilities that they must perform, which may include being an attendant for one or more employees who enter the confined space. The elements covered in the attendant training portion of the program include:

- Constant observation of those in the confined space.
- Observe the performance and behavior of Entrants
- Monitor confined space atmosphere using the correct instrument and record.

- Keep retrieval lines from tangling (if in use)

Duties: Entry Supervisors

Those persons who have completed the training and have been designated as Entry Supervisors are assigned specific duties and responsibilities that they must perform, including:

- Possessing a current first aid and CPR/AED certification
- Knowledge of the space to be entered
- Training on the equipment and PPE to be used during entry
- Assigning entry and tasks to those most qualified
- Able to react in an emergency situation

The elements covered in the training program for Confined Space Permit Required Entry Supervisors include:

- Identifying the hazards in the confined space.
- Knowledge of the instrumentation and monitoring equipment
- Assigning tasks and training to those most qualified
- Completion and filing the CS permits.
- Monitoring the entry from beginning to end
- Handling emergency situations
- Use and limitations of Personal protective equipment (PPE)
- Use of the four gas monitor

Training Program

Every employee who faces the risk of confined space entry is provided with training so that they understand the Confined Space Program and the skills necessary for the safe performance of the duties assigned to them. The EHS Department, Maintenance Department, or qualified designee will conduct the Confined Space Training. All training related materials, documents, and signed certifications will be forwarded to the respective HR department, for PLEX computerization and filing.

Training will use a combination of classroom lecture, power point, video, quiz, and certification.

New employees will be trained before their initial assignment of duties. When changes occur in permit-required confined space areas, the affected trained confined space personnel will be notified in writing of those changes. If there is reason to believe that an employee has deviated from a previously trained procedure or that their knowledge is not adequate, additional training will be conducted and their performance will be re-evaluated.

Upon successful completion of Confined Space Training, each participant must verify that they understand the material presented and will follow all company policies and procedures regarding permit space entry. These certifications will be maintained in the respective HR Department.

Rescue and Emergency Services

Nanogate North America LLC uses its own employees to perform rescue services in the event of a permit space emergency. This group of employees has been trained, at a minimum, to:

- Perform the assigned rescue duties.
- Correctly use personal protective equipment (PPE) required for the job.
- Establish proficiency as an authorized entrant, as provided by 1910.146(g) and (h).
- Perform basic first-aid and cardiopulmonary resuscitation (CPR).
- Ability to assess an emergency situation.
- Call 911 for further assistance for medical or transport when necessary.
- Mansfield Fire Department shall be the backup rescue source.

Nanogate North America also ensures that at least one member of the rescue team holds a current certification in first-aid and CPR, and that affected employees practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from the permit spaces or from representative permit spaces. Representative permit spaces will, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue are to be performed.

Rescue and emergency training will be conducted by the Maintenance or EHS Department or by an outside contractor proficient in rescue training. The employees assigned to emergency rescue teams will be listed in the permit-required confined space entry folders located in the Maintenance Department of each plant. A copy will be maintained by the EHS Department, and will be updated annually.

Outside Contractor Entry Procedures

When outside employers/contractors enter our facility to perform work in permit spaces, they are required to review and follow our Confined Space Procedures. Before work begins, the Maintenance Department will determine the following:

- What type of work is to be done?
- Who will be doing the work?
- Who will be Authorized Attendants and Entrants
- The equipment to be used.
- A time frame when work will be completed.
- Permit procedures and filing of all paperwork from beginning to end.

Post-operations Procedures

Upon completion of work in a permit space, the Maintenance Department or Shift Supervisor who issued the permit will:

- Interview those who entered the space.
- Verify the work was completed.
- Verify that all tools and equipment are removed from the confined space.
- Assure all equipment is ready for start-up.

Review-Procedures

To ensure that all employees participating in entry operations are protected from permit space hazards, the EHS Department and Maintenance Manager will review the Permit-Required Confined Space Entry Program annually. Canceled permits will be filed by the Maintenance Department for one year and will then forward to the EHS Department, to be maintained for two years. The permits will be reviewed to revise and improve the program as necessary.

Enforcement

Constant awareness of and respect for Confined Space and Permit-Required Confined Space entry and work hazards and compliance with all safety rules are considered conditions of employment. Employees may be issued disciplinary warnings, up to and including termination, for failure to follow the guidelines of the Confined Space Program.

Appendices

Appendix 1 Confined Space Entry Permit

Appendix 2 Confined Space Assessment Form

Appendix 3 As confined spaces are identified and labeled in each plant, they will be listed for reference purposes as Appendices in this plan.

04/28/08	Plan Written	Ken Bower
06/03/08	Revision Log	Ken Bower
06/12/08	Added Appendices	Ken Bower
07/02/11	Plan revised	Allen Wheeler
03/11/16	Plan revised; hazard analysis and permit required forms added	Marijan Grogoza
04/29/2019	Plan rewritten forms changed	Ralph Hall

Nanogate North America LLC

CONFINED SPACE HAZARD ANALYSIS.

(Name of Plant) _____

Name of Confined Space:

_____

Space Location/Description:

_____

Persons completing analysis:

_____

Date and time of analysis:

_____

A. IS IT A CONFINED SPACE?

1. The area was NOT designed for continuous human occupancy.

    - Yes, it was NOT designed for continuous human occupancy
    - No, it was designed for continuous human occupancy

Description:

2. The area can be bodily entered and assigned work can be performed inside

    - Yes
    - No

Description:

3. The area has a limited or restricted means of entry and exit (tanks, pits, vessels, silos, storage bins, hoppers, vaults, and pits).

- Yes
- No

Description:

If you answered YES to ALL of the three questions above, then the space is considered to be a confined space. Please answer the questions below to determine if a permit is required.

A. IS IT A PERMIT-REQUIRED CONFINED SPACE?

1. Is the space shaped so that a person could be entrapped or asphyxiated by converging walls or floors that slope downward and taper to a smaller cross-section?

    - Yes
    - No

Description:

2. Does it contain materials that have the potential to engulf the entrant?

    - Yes
        - Water/waste/chemicals/paint _____
        - Sand/gravel/loose rock/soil _____
        - Oil
        - Plastic pellets or other loose materials _____
        - Powder
        - Other _____

    - No

3. Does the space have the potential for a hazardous atmosphere?

    - Yes

        - Oxygen deficiency
        - Oxygen enriched
        - Explosive Gas/Vapor _____
        - Explosive Dust
        - Carbon Monoxide
        - Hydrogen Sulfide
        - Chlorine
        - Other _____

        - No

4. Is there a potential for any other safety or health hazard?

    - Yes
        - Electrical _____
        - Moving Parts _____

- Slips and trips _____
- Falling more than five feet _____
- Heat
- Cold
- Skin or Eye Irritants _____
- Noise _____
- Chemicals (list)_____

- Other _____

5. Is ventilation needed in the space?

- Yes
  - Natural
  - Forced Positive
  - Forced Negative

- No

If you answered "No" to <u>all</u> five of the above questions, then the confined space is considered a <u>non-permit required confined space</u>.

If you answered "Yes" to <u>any</u> of the above questions, then the confined space is considered a <u>permit-required confined space</u>.

For both space classifications, (permit-required <u>or</u> non-permit required confined space), complete the following hazard assessment checklist to determine if other hazards are present in the space:

6. <u>SAFETY HAZARDS</u>

- Animals or insects (stinging, biting, snakes, skunks)
- Low ceilings (ergonomics, sharp objects, visual obstructions)
- Sharp objects
- Electrical hazards (live circuits, metal rope around electrical devices)
- Adverse temperatures (steam lines, coolant lines)
- Slippery ladder rungs
- Rusty surfaces (cuts, hides chemicals, poor footing)
- Chemical coated walls/surfaces
- Biological residue/slime (exposure, slippery surfaces, sewage)
- Loud ambient noise - traffic, etc. (annoyance, communications interference)
- Vibration (discomfort, noise)
- Poor lighting (can't read meters, can't perform critical tasks)
- Radiation
- Other extreme ergonomic conditions including those that may occur because of PPE limitations: respirators, fall protection harnesses, connection to retrieval equipment

- Liquids on floor/walking surface (standing water)
- Hazards external to the hole that could affect operations--combustion exhaust, possible precipitation, vehicle traffic, overhead electrical wires, chemical/hazardous materials lines nearby
- Others:

D. HEALTH HAZARDS

Chemical Hazards (list) _____

Asphyxiation Potential: _____

E. GETTING TO THE CONFINED SPACE

7. How is the space entered?
    - Fixed ladder
    - Stairs
    - Portable Ladder
    - Scaffold
    - Lowering winch/tripod (regular work; not a rescue)
    - Other _____

8. Is the entrance easily accessible?
    - Yes
    - No

Describe entrance _____

9. Is there plenty of workspace available to set up all equipment at entrance?
    - Yes
    - No

Limitations:

Type of entry:
- Vertical
- Horizontal

10. Horizontal Entries

How far above the ground?_____
Is there a work provided to upper elevation? _____
Is there a place to secure lifeline? _____
Is there a location to place a mechanical device? _____
Are there cut hazards that can damage rescue rope? _____

F. INTERNAL CONFIGURATION

1. Can a person:

- Walk in erect
- Walk in stooped
- Crawl in on hands and knees
- Crawl in on stomach or back

How high are the ceilings? _____

2. What are the footing conditions inside space:

   - Flat Surface
   - Cramped or Limited
   - Round (horizontal pipe)
   - Uneven Surface
   - Slippery Footing Surfaces
   - Obstructions that have to be Stepped Over
   - Sharp Objects
   - Spilled Chemicals
   - Other:

3. Are there
   - Structural Cross Members
   - Head Hazards
   - Climb over required

H. FALL POTENTIAL

- None
- Yes, how far? _____
- Fall directly onto concrete/level surface? _____
- Fall onto something sharp? _____
- Any place to tie off/secure lanyard or winch? _____
- Extraction device available? _____

K. INTERNAL FEATURES

- Pipes/lines going through space?_____
- With mechanical joints, flanges or valves inside space?_____
- With possible openings inside space? _____
- Materials in pipes/lines? _____
- Electrical equipment that needs servicing? _____
- Possibility of engulfment? _____
- Entrapping features (converging walls, wedging situations)? _____

L. CONTAMINANTS TO SAMPLE FOR

- Oxygen

- Combustible gas? Type:
- Toxics

M. KNOWN USE OF SPACE

- Original
- Present Use
- Contained Chemicals
- Oxygen consumers? (Rust, decay, wet carbon, chemical reactions, combustion, etc.)
- Other

_____

N. HAZARDS/FEATURES OF THE SURROUNDING AREA

- Piping or chemical containers?
- What chemicals?
- How far away?
- Possibility of spill into Confined Space?
- High noise levels? (Communications interference)
- Soil methane?
- Parking lot, loading area or parking spaces close by?
- Can anything fall into the hole?
- Poor lighting in the area?
- No electrical services?
- No ground point?
- Traffic hazards (in surrounding area)?

O. SEASONAL WEATHER EFFECTS

- Must the entry be made in bad weather?
- Could precipitation create a hazard - subject to rapid flooding?

P. OTHER

- High ambient noise (or anything that can hamper communications)?
- Ambient temperature extremes (heat stress, direct employee exposure, cold stress, ice formation on working surfaces)?

_____

Q. HAZARDOUS ENERGY HAZARDS

- Moving machinery hazards?
- Written lockout procedures in place?
- Electrical energy hazards?
- Lockout procedures in place?
- Lockout points identified?
- Lockout points tagged or labeled?
- Are there chemical hazards?
- Is line breaking required?

- Is the shutoff valve identified or tagged?
- Is line blanking required?

R. SITE SUPPORT FEATURES

- Is there a certified grounding point available or in proximity?
- Are there electrical services present?
- How many outlets? (two separate circuits recommended)
- Is a generator required?
- Are there rope anchorage points available for rescue use?
- Other:

T. VISUAL

- Is there poor lighting?
- Can the entrants be visually observed by attendant?

U. VENTILATION

- Does the space have a configuration that will hamper effective ventilation/purging?
- Is the space a Convoluted Space?
- Is there a second or additional opening?
    - Are the exits close together
    - Will flow through ventilation be adequate?
    - What is the distance between the openings?

Estimate of Internal Volume of Space: _____

V. COMMUNICATIONS

- Is a radio required?
- Is Voice-Only adequate?
- Is there a telephone nearby?
- Is there radio or telephone interference?
    - Inside the space
    - Outside the space

W. DISTANCE INTO SPACE

11. Is the distance inside the space greater than 50 feet? (length of extraction cable)
12. Is the space large enough to require an extra internal attendant?

X. SEWER/MANHOLE WORK

- Telecommunications/Electrical?
- Sewer?
- Sanitary?
- Storm?

Once the hazard assessment checklist is complete, file the completed form with the plant Maintenance Department with a copy sent to EHS. If necessary, consult EH&S for assistance.

Nanogate North America LLC INC. CONFINED SPACE ENTRY PERMIT

Confined Space Permit

Date_____ Time of Issue _____ Length of Permit _____
Location _____ Equipment ID _____
Purpose of entry & Description of work _____
_____
_____
Authorized Entrants _____
Eligible Attendants _____
Authorizer of this Entry _____
Will "HOT" work be authorized for this entry? _____ No _____Yes (describe) _____
_____

HAZARD IDENTIFICATION

Indicate ALL potential Hazards of this Permit Space:	YES	NO
a. Contains or may contain a hazardous atmosphere.	____	____
b. Contains a material for potential engulfment.	____	____
c. Has an internal configuration for potential entrapment	____	____

If "yes", describe _____
_____
_____

PRE-ENTRY PREPERATION

			Done			Removed		
	Yes	N/A	Date	Time	By	Date	Time	By
1. Lines broken and/ or blanked:	_____	____	_____	____	____	_____	_____	____
Line Contents Location								
a. _____ _____	_____	____	_____	____	____	_____	_____	____
b. _____ _____	_____	____	_____	____	____	_____	_____	____
c. _____ _____	_____	____	_____	____	____	_____	_____	____
2. Drain or at a workable level	_____	____	_____	____	____	_____	_____	____
3. Purge- Flush and vent	_____	____	_____	____	____	_____	_____	____
4. Force air to bottom and vent	_____	____	_____	____	____	_____	_____	____
5. Lock out power feeds	_____	____	_____	____	____	_____	_____	____
Equipment/Location of lock out	_____	____	_____	____	____	_____	_____	____

a. _____ _____ ____ _____ ____ ____ _____ _____ ____

b. _____ _____ ____ _____ ____ ____ _____ _____ ____

c. _____ _____ ____ _____ ____ ____ _____ _____ ___

6. Shut-off heating systems _____ ____ _____ ____ ____ _____ _____ ____

7. Other: _____ _____ ____ _____ ____ ____ _____ _____ ____

_____ _____ ____ _____ ____ ____ _____ _____ ____

TEST TO BE TAKEN

Atmospheric testing Time

Tester: _____

PEL	YES	N/A	Results	Results	Results	Results
% of Oxygen 19.5%-21%	_____	_____	_____	_____	_____	_____
Temperature 110F /43C	_____	_____	_____	_____	_____	_____
% of LEL: Any % over 10	_____	_____	_____	_____	_____	_____
Hydrogen Sulfide 10 ppm	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

PREVENTION OF UNAUTHORIZED ENTRY

	YES
1. Have workers to enter been trained for this specific entry?	_____
2. Have attendants been trained for this specific space?	_____
3. Have you posted a WORKER IN CONFINED SPACE sign?	_____
4. Set-up the following additional barriers:	_____

_____ _____

_____ _____

MANDENTORY SAFETY EQUIPMENT REQUIRED

	Yes	N/A
1. Fire Extinguisher	____	_____
2. Retrieval Lines	____	_____
3. Respirator	____	_____
4. Goggles	____	_____
5. Hearing protection	____	_____
6. Protective clothing	_____	_____
7. Special Boots or Shoes	_____	_____
8. Gloves	_____	_____
9. Other safety equipment		
_____	_____	_____
_____	_____	_____

COMMUNICATION PROCEDURES AND EQUIPMENT TO BE USED FOR ENTRY

(Verify that chosen equipment is in place and operational) Verified by:

1._____ _____

2._____ _____

RESCUE EQUIPMENT TO BE PROVIDED ON-SITE

	Yes	N/A
a. Two harnesses or two wristlets	_____	_____
b. Two five minute supply capsules	_____	_____
c. One 30 minute S.C.B.A.	_____	_____
d. One emergency siren	_____	_____

e. Other necessary Rescue Equipment: _____ _____

_____ _____ _____

_____ _____ _____

IN CASE OF EMERGENCY

Rescue Services Phone Number or Extension

1. _____ _____

2. _____ _____

3. _____ _____

AUTHORIZER must sign below **AFTER** all the above actions are fully understood and conditions necessary for **SAFE** entry have been met.

Authorizer of Entry _____ _____ _____

Signature Date Time

Upon completion of the entry covered by this **Permit**, and after all entrants have exited the Permit space, **Authorizer** must sign below.

Canceled by _____ _____ _____

Signature Date Time

Appendix 3

Identified Confined Spaces

Permit required confined space	Location	Hazard	Hazard	Hazard
Palin pit	Paint lines	Entrapment, Drounding	Chemical residue	
Jay plastics Silos 1,2,3,4,5,6,7	Extrior of building	Entrapment,engulfment	Poor air quality	
Top coat pit	Top coat	Entrapment, Drounding	Chemical residue	
Paint line 3 pit	Paint 3	Entrapment, Drounding	Chemical residue	
Deflash Booths 1 and 2	BMC	6000 psi spray	Crush from robot	
Trash compactor	Lean too	Entrapment	Crush from compactor	
Absorber tower 1	Absorber room 1	Entrapment, Drounding	Poor air quality	
Absorber tower 2	Absorber room 2	Entrapment, Drounding	Poor air quality	
Paint line chiller tank	Below paint line chiller	Entrapment, Drounding	Poor air quality	
South chill tank	Out side of E-brite 7	Entrapment, Drounding	Poor air quality	
South Tower tank	South mechanical	Entrapment, Drounding	Poor air quality	
East chill tank	By machine 19	Entrapment, Drounding	Poor air quality	
East tower	Outside of maintenance	Entrapment, Drounding	Poor air quality	
North west tower	By machine 20	Entrapment, Drounding	Poor air quality	
BMC tower	sement by high pressure pum	Entrapment, Drounding	Poor air quality	
All tanks in the Kolene	Kolene room	Entrapment, Sufuric acid	Sodium Hydroxide	900 degree salt bath
EB1 WC Grant 319-grant	roof above EB1	Pinch, crush from fan		
EB2 WC Grant 339-grant	roof above EB2	Pinch, crush from fan		
EB2 WC Grant 338-grant	roof above EB2	Pinch, crush from fan		
EB3 Dehumidifier 326-carrier	roof above EB3	Pinch, crush from fan		
EB4 CDI make up air 334b-CDI	roof above EB4	Pinch, crush from fan		
EB4 WC Grant -337	roof above EB4	Pinch, crush from fan		
EB5 CDI air handler CDI-334	roof above EB5	Pinch, crush from fan		
EB7 Mclean 559C-air	roof above EB7	Pinch, crush from fan		
BAC chiller 1,2,3,4,5	Roof	Pinch point, entrapment	Drounding	
Top coat mat washer	Top coat	Crush, Pinch from rotator	Steam, Hot water	High pressure spray
JTR area				
JTR oil tank	East of JTR	Entrapment	Bad air	
1170 Batch burn off oven	rear of JTR	Natural gas burners	High temp	Poor air quality
WC Grant make up air 1023	rear of JTR	Pinch, crush from fan		
Silo B1	East of JTR	Entrapment,engulfment	Poor air quality	
Silo B2	East of JTR	Entrapment,engulfment	Poor air quality	
Silo B3	East of JTR	Entrapment,engulfment	Poor air quality	
Silo B4	East of JTR	Entrapment,engulfment	Poor air quality	
Silo A1	North of JTR	Entrapment,engulfment	Poor air quality	
Silo A2	North of JTR	Entrapment,engulfment	Poor air quality	
Silo A3	North of JTR	Entrapment,engulfment	Poor air quality	
Silo A4	North of JTR	Entrapment,engulfment	Poor air quality	
Silo A5	North of JTR	Entrapment,engulfment	Poor air quality	
Silo A6	North of JTR	Entrapment,engulfment	Poor air quality	
1100 Blend B1	Blending area	Entrapment,engulfment	Poor air quality	Crush from mixer
1101 Blend B2	Blending area	Entrapment,engulfment	Poor air quality	Crush from mixer
1102 Blend B3	Blending area	Entrapment,engulfment	Poor air quality	Crush from mixer
1103 Blend B4	Blending area	Entrapment,engulfment	Poor air quality	Crush from mixer
1104 Blend B5	Blending area	Entrapment,engulfment	Poor air quality	Crush from mixer
1105 Post Blend Line 1	Blending area	Entrapment,engulfment	Poor air quality	Crush from mixer
1106 Post Blend Line 2	Blending area	Entrapment,engulfment	Poor air quality	Crush from mixer
1107 Post blend auxilary	Blending area	Entrapment,engulfment	Poor air quality	Crush from mixer