Preliminary Hazard Analysis Template

Complete

Score	6 / 6 (100%)	Flagged items	3	Actions	2

Process/Project Name

Nitroglycerin Production

PHA Team Lead Clifton Champlin

PHA Team Members

Emily Carter
Jessica Thompson
Matthew Hayes
Brian Turner
Oliver Sanders

Project Location/Facility El Paso, Texas Site

Date of Inspection 02.09.2024 08:00 PST

Flagged items & Actions

3 flagged, 2 actions

Flagged items

3 flagged, 0 actions

Hazard Identification / Task / Task 1

Probability of Risk (5x5 Risk Matrix)

Likely

Hazard Identification / Task / Task 1

Impact of Risk (5x5 Risk Matrix)

Severe

Hazard Identification / Task / Task 2

Impact of Risk (5x5 Risk Matrix)

Severe

Other actions

2 actions

Action Plan for Hazard Mitigation / Action Plan / Action Plan 1

Recommended Action/Control (Assign person and deadline)

Implement automated temperature control, redundant cooling systems, real-time monitoring

To do | Assignee: Anna Barcons Folguera, SafetyCulture Staff | Priority: Low | Due: 04.09.2024 12:00 PST | Created by: SafetyCulture Staff

Get price quotation of these equipment

Hi Anna, please make a list of suppliers of these equipment and submit to the PHA team by Wednesday noon.

Action Plan for Hazard Mitigation / Action Plan / Action Plan 2

Recommended Action/Control (Assign person and deadline)

Ensure that all containers have durable shock-absorbent, molded polystyrene packaging.

Photo 1

To do | Assignee: SafetyCulture Staff | Priority: High | Due: 04.10.2024 17:43 PST | Created by: SafetyCulture Staff

Include that this kind of packaging is included in the monthly procurement list

Hi Logistics Team, ensure that we always stock on shock-absorbent, molded polystyrene packaging. Thank you.

Process Overview

Process Description

The nitroglycerin production process involves the controlled nitration of glycerin using a mixture of concentrated sulfuric acid (H2SO4) and nitric acid (HNO3). The reaction produces nitroglycerin, a highly volatile and explosive compound, and water. The process must be carried out under strict temperature control in a nitration unit, followed by neutralization, washing, and drying to remove residual acids. The final product is stored in specialized containers under stable, cool conditions to prevent accidental detonation.

Process Flow Diagram (Attach file if available.)

Please see attached process flow diagram file.

Nitroglycerin Production Flow Diagram.pdf.pdf

List of Equipment and Materials Used

List of Equipment:

Reactor Vessels
Cooling Systems
Storage Tanks
Mixing Equipment Filtration Systems
Transfer Pumps
Analytical Equipment
Safety Equipment
Packaging Machines
Explosion-Proof Enclosures

List of Materials:

Glycerol
Nitric Acid
Sulfuric Acid
Water
Stabilizers (e.g., diphenylamine)
Solvents (e.g., acetone, ethanol)
Explosive Additives (e.g., ammonium nitrate, cellulose)
Corrosion Inhibitors
Protective Coatings (for storage and transport)

Please see attached file for quantity of materials need for production.

Nitroglycerin (Quantity of Materials List).pdf.pdf

Hazard Identification	3 flagged, 4 / 4 (100%)
Task	3 flagged, 4 / 4 (100%)
Task 1	2 flagged, 2 / 2 (100%)

Name of Task

Nitration Reaction

Hazard Description

Explosion due to uncontrolled reaction

Consequence

Excursion, acid concentration variance, detonation, severe damage to equipment and life

Probability of Risk (5x5 Risk Matrix)	Likely
Impact of Risk (5x5 Risk Matrix)	Severe

Current Control Measures

Implementation of "No PPE, No Entry" onsite

Task 2	1 flagged, 2 / 2 (100%)

Name of Task

Transportation of Nitroglycerin

Hazard Description

Detonation during transport

Consequence

Loss of life, environmental damage

Probability of Risk (5x5 Risk Matrix)	Unlikely
Impact of Risk (5x5 Risk Matrix)	Severe

Current Control Measures

Using regulatory-compliant transport vehicles

Action Plan for Hazard Mitigation	2 actions, 2 / 2 (100%)
Action Plan	2 actions, 2 / 2 (100%)
Action Plan 1	1 action, 1 / 1 (100%)

Name of Task

Nitration Reaction

Recommended Action/Control (Assign person and deadline)

Implement automated temperature control, redundant cooling systems, real-time monitoring

To do | Assignee: Anna Barcons Folguera, SafetyCulture Staff | Priority: Low | Due: 04.09.2024 12:00 PST | Created by: SafetyCulture Staff

Get price quotation of these equipment

Hi Anna, please make a list of suppliers of these equipment and submit to the PHA team by Wednesday noon.

Status	Pending
Completion Date	27.09.2024 17:00 PST
Action Plan 2	1 action, 1 / 1 (100%)

Name of Task

Transportation of Nitroglycerin

Recommended Action/Control (Assign person and deadline)

Ensure that all containers have durable shock-absorbent, molded polystyrene packaging.

Photo 1

To do | Assignee: SafetyCulture Staff | Priority: High | Due: 04.10.2024 17:43 PST | Created by: SafetyCulture Staff

Include that this kind of packaging is included in the monthly procurement list

Hi Logistics Team, ensure that we always stock on shock-absorbent, molded polystyrene packaging. Thank you.

Status	In Progress

This will always be in progress to ensure that we have supply of this kind of packaging.

Completion Date

Sign-off

Preliminary Hazard Analysis Reviewed By

Marcel Russel
27.09.2024 17:44 PST

Designation of the Reviewer

Safety Director

Reviewer's Comment or Feedback

See my detailed recommendation attached herewith.

Nitroglycerin Production (PHA Feedback).pdf

Date Reviewed	27.09.2024 15:30 PST
Next Scheduled PHA Template Review (At least within the next 6 months)	02.12.2024 08:00 PST

Media summary

Photo 1

File summary

Nitroglycerin Production Flow Diagram.pdf.pdf
Nitroglycerin (Quantity of Materials List).pdf.pdf
Nitroglycerin Production (PHA Feedback).pdf