Applicant: CHEMIEVOLVE INDUSTRIES

Inventors: Abhinav Kumar Saha, Saurabh Kumar

Chemical Product Formula: $(C_6H_4CO_2H)_2$

Chemical Product Name: Diphenic Acid

EHS Summary:

Material	Potential Environmental Hazard
Hydrochloric acid (concentrated)	Corrosive and toxic to aquatic life
Sodium nitrite	Harmful if swallowed, oxidizer
Concentrated ammonium hydroxide	Corrosive
Copper sulphate (from cupric sulphate pentahydrate)	Toxic to aquatic life
Sodium hydroxide solution (6 N)	Corrosive

Material	Potential Environmental Hazard	Optimized Controls
Concentrated hydrochloric acid	Corrosive and toxic to aquatic life	* Minimize use * Utilize a spill tray to contain spills * Neutralize waste before disposal according to regulations
Sodium nitrite	Pollutant, toxic to aquatic life	* Minimize use * Close containers after use * Dispose of waste according to regulations
Concentrated ammonium hydroxide	Corrosive	* Minimize use * Utilize a fume hood * Dispose of waste according to regulations
Copper sulphate (from cupric sulphate pentahydrate)	Toxic to aquatic life	* Minimize use * Dispose of waste according to regulations for heavy metals
Sodium hydroxide solution (6 N)	Corrosive	* Minimize use * Utilize a spill tray to contain spills * Neutralize waste before disposal according to regulations
Sodium nitrite	Harmful if swallowed, oxidizer	* Minimize use * Store away from flammable materials * Dispose of waste according to regulations
Cupric sulfate pentahydrate	Harmful to aquatic life	* Minimize use * Utilize a spill tray to contain spills * Dispose of waste according to regulations for metal compounds
Ammonium hydroxide (concentrated)	Corrosive and harmful to the environment	* Minimize use * Utilize a spill tray to contain spills * Work in a fume hood * Dispose of waste according to regulations
Hydroxylamine sulfate	May be harmful to the environment	* Minimize use * Utilize a spill tray to contain spills * Dispose of waste according to regulations

Health Considerations

Material	Potential Health Hazard	Optimized Controls
Anthranilic acid	Irritant	* Wear gloves, safety glasses, and a lab coat * Work in a well-ventilated area
Concentrated hydrochloric acid	Corrosive; causes severe skin burns and eye damage	* Wear PPE including gloves, safety glasses, splash shield, and a lab coat * Work in a fume hood
Sodium nitrite	Harmful if swallowed; can cause methemoglobinemia	* Wear gloves, safety glasses, and a lab coat * Do not eat, drink, or smoke in the lab * Wash hands thoroughly after handling
Concentrated ammonium hydroxide	Corrosive; harmful to respiratory system and eyes	* Wear PPE including gloves, safety glasses, splash shield, and a lab coat * Work in a fume hood
Copper sulphate (from cupric sulphate pentahydrate)	Harmful if swallowed or inhaled	* Wear gloves, safety glasses, and a lab coat * Wash hands thoroughly after handling
Sodium hydroxide solution (6 N)	Corrosive; causes severe skin burns and eye damage	* Wear PPE including gloves, safety glasses, splash shield, and a lab coat * Work in a fume hood
Diazonium salt solution (generated)	Shock-sensitive, decomposes exothermically	* Keep cool (ice bath) * Handle with care to avoid vibrations or impact * Do not store the diazonium salt solution
Cupric sulfate pentahydrate	Irritant * May cause eye irritation * May cause skin irritation	* Wear gloves, safety glasses, and a lab coat
Ammonium hydroxide (concentrated)	Corrosive; causes severe skin burns and eye damage * Harmful if inhaled	* Wear PPE including gloves, safety glasses, splash shield, and a lab coat * Work in a fume hood
Hydroxylamine sulfate	May be harmful if swallowed or inhaled * Irritant * May cause eye irritation * May cause skin irritation	* Wear gloves, safety glasses, and a lab coat * Work in a fume hood (if dust is generated)
Sodium hydroxide (6 N solution)	Corrosive; causes severe skin burns and eye damage	* Wear PPE including gloves, safety glasses, splash shield, and a lab coat * Work in a fume hood

References: https://pubchem.ncbi.nlm.nih.gov/compound/Diphenic-acid#section=Hazard-Classes-and-Categories

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List the contributions of each author:

- Abhinab Kumar Saha determined the waste generation quantity.
- Saurabh Kumar carried out the literature search and found the current regulations.
- Saurabh Kumar and Abhinab Kumar Saha estimated the overall health impact of the components involved.

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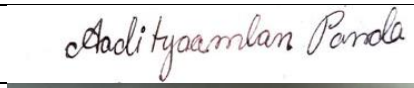
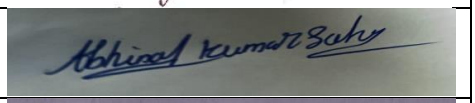
Aadityaamlan Panda	220007	
Abhinab Kumar Saha	220036	
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