**Applicant:** CHEMIEVOLVE INDUSTRIES

**Inventors:** Abhinav Kumar Saha, Saurabh Kumar

**Chemical Product Formula:** (C6H6O·CH2O)n

**Chemical Product Name:** Polyoxybenzylmethyleneglycolanhydride(Phenol-Formaldehyde Resin)

**EHS Summary:**

**Formaldehyde: -**

Health Considerations

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| --- | --- | --- | --- | --- | --- | --- |
| Substance | Hazard | Potential Routes of Exposure | Symptoms of Exposure | Engineering Controls | PPE | Safe Work Practices |
| Formaldehyde | Inhalation - irritant & suspected carcinogen, Skin & Eye contact - irritant | Inhalation, Skin contact, Eye contact | Respiratory irritation, coughing, wheezing, skin irritation, eye irritation, cancer (long-term exposure) | Fume hood | Chemical resistant gloves, Safety glasses/goggles, Lab coat, Respirator (if applicable) | Use in fume hood, Label containers, Minimize quantities, Never mouth pipet, Clean up spills, Dispose of waste properly |
| Phenol | Skin contact - corrosive & can be absorbed, Inhalation & Eye contact - irritant | Skin contact, Inhalation, Eye contact | Skin burns, irritation, respiratory problems, eye damage | Fume hood, Eye wash station, Safety shower | Chemical resistant gloves, Safety glasses/goggles, Lab coat | Use in fume hood, Label containers, Minimize quantities, Never mouth pipet, Clean up spills, Dispose of waste properly |
| Ammonia (Basic Solution) | Inhalation - irritant to respiratory system, Skin & Eye contact - irritant | Inhalation, Skin contact, Eye contact | Respiratory irritation, coughing, wheezing, burning sensation in eyes and skin | Fume hood, Eye wash station, Safety shower | Chemical resistant gloves, Safety glasses/goggles, Lab coat | Use in fume hood, Label containers, Minimize quantities, Never mouth pipet, Clean up spills, Dispose of waste properly |

Environmental Considerations

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| --- | --- | --- |
| Substance | Environmental Impact | Disposal Methods |
| Formaldehyde | Air pollutant, can contribute to smog formation | Treated in a permitted hazardous waste facility |
| Phenol | Toxic to aquatic life, can disrupt ecosystems | Incineration in an approved facility, (depending on local regulations) |
| Ammonia (Basic Solution) | Can cause excessive algal growth (eutrophication) in waterways | Neutralize before disposal according to local regulations |

Phenol:-

Health Considerations

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Substance | Hazard |  | Potential Routes of Exposure | Symptoms of Exposure | Engineering Controls | PPE | Safe Work Practices |
| Phenol | Skin contact - corrosive & can be absorbed, Inhalation & Eye contact - irritant |  | Skin contact, Inhalation, Eye contact | Skin burns, irritation, respiratory problems, eye damage | Fume hood, Eye wash station, Safety shower | Chemical resistant gloves, Safety glasses/goggles, Lab coat | Use in fume hood, Label containers, Minimize quantities, Never mouth pipet, Clean up spills, Dispose of waste properly |
| Formaldehyde | Inhalation - irritant & suspected carcinogen, Skin & Eye contact - irritant |  | Inhalation, Skin contact, Eye contact | Respiratory irritation, coughing, wheezing, skin irritation, eye irritation, cancer (long-term exposure) | Fume hood | Chemical resistant gloves, Safety glasses/goggles, Lab coat, Respirator (if applicable) | Use in fume hood, Label containers, Minimize quantities, Never mouth pipet, Clean up spills, Dispose of waste properly |
| Bakelite (if applicable to your situation) | Refer to SDS for specific hazards |  | Inhalation, Skin contact | Refer to SDS for specific symptoms | Engineering controls may vary depending on process | PPE may vary depending on process | Follow recommended safe work practices for handling Bakelite based on its physical and chemical properties |

Environmental Considerations

|  |  |  |
| --- | --- | --- |
| Substance | Environmental Impact | Disposal Methods |
| Phenol | Toxic to aquatic life, can disrupt ecosystems | Incineration in an approved facility, (depending on local regulations) |
| Formaldehyde | Air pollutant, can contribute to smog formation | Treated in a permitted hazardous waste facility |
| Bakelite (if applicable to your situation) | Limited data available, may leach chemicals if not disposed of properly | Landfill disposal may be appropriate for cured Bakelite in some cases, consult with a licensed waste disposal company |

**References:** [https://pubchem.ncbi.nlm.nih.gov/compound/Diphenic-acid#section=HazardClasses-and-Categories](https://pubchem.ncbi.nlm.nih.gov/compound/Diphenic-acid#section=Hazard-Classes-and-Categories)

<https://publications.gc.ca/site/archivee-archived.html?url=https://publications.gc.ca/collections/collection_2021/cnrc-nrc/NR24-90-2021-eng.pdf>

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1048>

<https://publications.gc.ca/collections/collection_2021/cnrc-nrc/NR24-90-2021-eng.pdf>

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**List the contributions of each author:**

* Saurabh Kumar determined the environmental impact and waste generation quantity.
* Abhinav Kumar Saha carried out the literature search, Health cosideration and found the current regulations.
* Saurabh Kumar and Abhinab Kumar Saha estimated the overall health impact of the components involved.

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