|  |  |  |  |
| --- | --- | --- | --- |
| **Task: Spill Response Guide** | **Prepared By:** | **S.W.P. #** | |
| **Date:** | **Risk Assessment Critical Rating:** | |  |
| **Location:** | | | |
| **P.P.E. Required: CSA Safety Glasses/Steel Toed Shoes, Hearing Protection, Gloves, Goggles, Respirators, Possibly Rubber Aprons and Suits** | | | |
| **Training Required: Spill Response Training, Use of Required P.P.E.** | | | |
| **Resources Used: Chapter W210, The Workplace Safety and Health Act – Manitoba Regulation 217/2006 and all Applicable Standards, Operator’s Manual,** | | | |

This **Spill Response** **Guide** is to be used as a quick reference for cleaning up chemical spills and dealing with fugitive emissions.

**This guide is not meant as a replacement for the MSDS sheets. Read and understand the MSDS sheets for the chemicals used in your area.**

It is important that everyone understands the hazards and knows how to properly respond to chemical spills and fugitive emissions (propane leak, natural gas leak, welding gasses leak, fumes of the spilt chemical, etc.). This guide will give an overview of the hazards associated with, and the P.P.E. required, to allow safe cleanup of any accidental release. This guide will also have the chemicals grouped instead of all chemicals written up individually.

**When in doubt always check the MSDS sheet.**

At the end of this guide you will find itemized lists of the various chemicals and gasses we have in use here. It will give a more detailed list of hazards and the effects the chemicals will have on a person, routes of entry, etc. It will also list degrees of flammability and explosiveness as well as must wear and recommended P.P.E.

|  |  |  |  |
| --- | --- | --- | --- |
|  | | | **Date:** |
| **Prepared By:** |  | |  |
| **Worker:** |  | |  |
| **Safety Com.:** |  | |  |
| **Supervisor:** |  | |  |
| **Approved By:** |  | |  |
| **Revision Level: Init.** | | **Date of Revision:** | |

**Table of Contents**

**Common Practices Page 3**

**Definitions Page 4**

**P.P.E. Requirements and Disposal Requirements Page 5**

**Paints**

**Deoxidine, Acid Clean, Gunwash, Reducers Page 6**

**Binders, Tinters, Primers, Accelerators Page 6**

**Aerosols**

**Aerosols, Zinc Rich Aerosols, Aerosol Lubricants Page 7**

**Oils**

**Gear Oils, Hydraulic Oils, Motor Oils, Grease Page 7**

**Fuels and Automotive Supplies**

**Battery Acid (not normally stocked) Page 7**

**Gasoline, Diesel Fuel, Fuel Additives Page 8**

**Anti-Freeze Products Page 8**

**Solvents, Degreasers, and Adhesives**

**Solvents, Polishers, Degreasers Page 8**

**Contact Cements, J.B. Weld, Loctite, Adhesives, Sealants Page 8**

**Welding Gasses and Supplies, Propane, Natural Gas**

**Flammable and Explosive Gasses Page 9**

**Inert Gasses Page 9**

**Pastes, Coolants, Layout Fluids Page 9**

**Coolant, Low Conductivity Page 10**

**Cleaners and Soaps**

**Hand Soaps, Floor Cleaners, General Cleaning Supplies Page 10**

**Common Practices**

With all chemical spills and fugitive emissions there is a protocol to follow. This will encompass what to do in a step by step process.

**All spills must be cleaned up immediately.**

1. **If it is safe to do so stop the leak. If unsafe to stop the leak evacuate the area and/or the shop immediately.**
2. Evacuation of the area or plant will depend on what kind of chemical is released, the size of the spill, and the dangers associated with that chemical.
3. Alert coworkers and evacuate the area if necessary. Most chemical spills require at a minimum a respirator for cleanup. Such spills **only people wearing the proper P.P.E. should be in the area.**
4. Report the leak to your Supervisor and the Health and Safety Coordinator immediately. Follow all instructions given to you by them.
5. If you have been trained in spill response follow these steps;
   1. Evacuate the area if necessary,
   2. Put on **all mandatory Personal Protective Equipment,**
   3. Shut off all sources of ignition in the event of a flammable liquid spill. Turn off all equipment in the area that might ignite the fumes,
   4. Dam the spill to contain it and prevent it entering the sewer system, contaminating the soil, or entering any other waterway,
   5. Absorb or clean up the spill according to MSDS sheet instruction for the spilled chemical. **Always use a scoop that is appropriate for the chemical being cleaned up. Avoid metal scoops as they can cause sparks and fires/explosions will result. Never use cement dust to absorb chemicals, it creates heat and could ignite the chemical.**
   6. Dispose of all chemical and materials used to absorb chemicals according to the MSDS sheet instructions,
   7. Ensure all leaks have been stopped, and;
   8. Ensure all fumes have been aired out and all residual effects have been cleaned up **before** anyone is allowed back into the area.
6. Not all chemical fumes respond the same. Those that are **heavier than air** will stay close to the ground and can spread a long distance to reach a source of ignition. These types of chemicals require **all ignition sources in the building to be eliminated** to prevent flash back from happening and igniting the pool of chemicals and/or causing an explosion.

**Definitions**

***Small Spill*** – For the purpose of this guide that will refer to spills **less than 20 liters.**

***Large Spills*** – For the purpose of this guide that will refer to **spills larger than 20 liters.**

***Diatomaceous******Earth*** – A light coloured porous rock composed of shells and diatomite. It is used to make products like Absorb-All that are used to soak up chemicals and other liquids to make clean up easy.

***Surfactants*** – Are compounds that lower the surface tension between two liquids or between a liquid and a solid. Surfactants may act as detergents, wetting agents, emulsifiers, foaming agents, and dispersants.

***Dermatitis*** – Is a skin irritation resulting in redness, swelling, and a rash.

***Aspiration*** – Typically a word found in first aid measures. It relates to vomiting. When it says Do Not Induce Vomiting it is because Aspiration can occur. It happens when vomiting and some of the liquid or fumes enter the lungs where they can cause serious damage.

***Lighter******than******Air*** – Means the fumes will rise up and become trapped at ceiling level.

***Heavier******than******Air*** – Means the fumes are heavier than air. The fumes will stay at floor level and spread throughout the shop.

***IDLH*** – Immediately Dangerous to Life and Health

***PEL*** – Permissible Exposure Limit mean the amount you can be exposed to before respirators or other P.P.E. is needed.

***TLV***– Threshold Limit Value means the same as PEL.

***STEL*** – Short Term Exposure Limit is the limit that the human body can handle in a 15 minute time period.

***P.P.E.*** – Personal Protective Equipment, gear that is designed to keep you safe. Ranging from safety glasses and face shields to air purifying and air fed respirators, rubber gloves and aprons to full body suits.

***Fugitive Emissions*** – Are escaping gasses or any other unwanted release of dangerous substances. Chemical spills can create fugitive emissions with their fumes spreading well beyond the site of the spill.

|  |
| --- |
|  |

**P.P.E. Requirements**

**All chemicals are toxic (poisonous) to one degree or another. For all Small Spills the minimum requirements are chemical resistant gloves if the material needs to be handled during/after clean up or if there is a chance of getting the chemicals splashed onto your hands. If there is adequate ventilation in most cases a respirator should not be required. If there is a chance of splashing the chemicals in your face a face shield and splash proof goggles are required. Whenever there is ANY Doubt as to what is required check the MSDS sheets.**

**Larger Spills will require more extensive protection due to the hazards being greater. Respirators and chemical resistant gloves will be required. Face shield and chemical resistant goggle are also required because there is a greater chance of it splashing back onto your face. Depending on the type of chemical rubber aprons, rubber boots, and maybe a full chemical suit may be required. In extreme cases supplied air respirators may be needed.**

***In Any spill where there is Fire involved requires great caution to be exercised. Fire releases dangerous fumes that would otherwise not be present. When Fire is involved evacuate the area Immediately. If you are going to be involved with putting out the fire or any clean up functions a full face supplied air respirator is required along with full body protective gear.***

**Disposal of Chemicals and Materials**

**All chemicals and absorbent materials, whether that is rags or Absorb-All, must be put into containers that do Not leak and can be sealed to contain all fumes. Consult the MSDS for further information on acceptable disposal methods. Some chemicals require special reclaim methods to be used while others may need to be neutralized before they are safe for disposal.**

**Deoxidine, Gunwash, Acid Clean, and Reducers**

**These chemicals all share the characteristic of being heavier than air. This means that the fumes can spread out a long way. That makes them dangerous from sources of ignition from across the shop.**

**Small Spills**

1. **Alert everyone in the immediate area,**
2. **Remove all sources of ignition,**
3. **Ensure proper ventilation,**
4. **Dike it off to prevent in from entering sewer systems or other water sources,**
5. **Put on gloves and other necessary P.P.E. then wipe up the spill if it is small enough,**
6. **If absorbent is needed spread absorbent over the spill,**
7. **Scoop up the chemical and absorbent into a leak proof and sealable container using a Plastic or other non-spark creating scoop,**
8. **Alert your Supervisor and the Health and Safety Coordinator for proper disposal.**

**Large Spills**

**Large spills are more dangerous and require greater care in alerting people and in cleanup methods. Specifically with the required P.P.E. and who needs to be alerted.**

1. **Alert everyone in the immediate area and your Supervisor, Supervisor will alert Health and Safety Coordinator,**
2. **Remove all sources of ignition. This might require plant wide attention depending on the size of the spill and the amount of clean up time required,**
3. **Ensure proper ventilation,**
4. **Put on all required P.P.E. especially your respirator,**
5. **Dike off the spill to prevent it from entering any sewer or water sources,**
6. **Spread Absorb-All over the spill to soak it up,**
7. **Scoop up the chemical and absorbent into a leak proof and sealable container using a Plastic or other non-spark creating scoop,**
8. **Your Supervisor or Health & Safety Coordinator will make all necessary arrangements for disposal.**
9. ***If a Reclaim system is going to be used for larger spills the scoop used must be made of anti-static and non-spark creating material. If a vacuum pump is being used it Must be of an Explosion Proof design. Another inherent danger of this type of cleanup method is that it will take a lot more time. That means it may be necessary to shut down All shop equipment and evacuate the building due to the fumes. The longer cleanup takes the more fumes will be produced.***
10. **Check the MSDS sheet for instructions on how to clean up any left-over residue to prevent slipping hazards.**

**Binders, Tinters, Primers, and Accelerators**

**Follow the same procedure for these chemicals as those mentioned above. I have put them in a separate category because the fumes generated are not as explosive as those mentioned above. This also allows more time to properly clean up the areas. When using a reducer to clean up residue wet a rag and wipe it up. Do not pour reducer on the area creating an intentional spill.**

**Aerosols**

**Paints, Lubricants, Anti-Spatter and Layout Fluid**

**Aerosols generally do not pose a spill hazard. Should one become punctured the spill amount will be small. The dangers present in such a situation is more of flammability and explosion hazard as the fumes can be dispersed in a large area very quickly. Some propellants are highly flammable and explosive (propane). Clean up would consist of the same protocol as a small spill cleanup with an added emphasis on proper ventilation.**

**Oils**

**Gear Oils, Grease, Hydraulic Oils, Motor Oils**

**Oils in general do not pose a dangerous fumes risk unless heated. General ventilation is usually adequate. Required P.P.E. is usually limited to gloves. In the quantities we currently stock these items they will all fall under the Small Spill category.**

1. **Alert co-workers in the immediate area to prevent slipping incidents,**
2. **Eliminate sources of ignition close to the spill,**
3. **Cover the spill with an absorbent material,**
4. **Scoop the oil and material into a pail for disposal,**
5. **Clean up the residue with a solvent wet rag, wear respirator when working with solvents, to prevent further slipping hazards.**

**Battery Acid**

**This is not normally a stock item but we will have it on hand occasionally.**

***This contains 36% Sulphuric Acid and is highly corrosive and poisonous.***

***Do not use any metals in the cleanup process. This can produce Hydrogen Gas which is highly explosive.***

***Do Not try to dilute the spill with water as this can cause dangerous splashing.***

1. **Alert everyone in the immediate area, your Supervisor, and the H&S Coordinator immediately,**
2. **Put on All appropriate P.P.E.**
3. **Dike the spill to ensure it is and remains contained**
4. **Eliminate ALL sources of ignition,**
5. **Fumes are heavier than air. This means all ignition sources in the shop must be eliminated until spill can be neutralized,**
6. **Neutralize spill with lime slurry, limestone, or soda ash,**
7. **Once neutralized it is safe to clean up with a dry and inert absorbent,**
8. **Using a Plastic scoop Only, scoop up material and place in an appropriate disposal container,**
9. **Ensure area is properly ventilated to remove fumes,**
10. **Dispose of in accordance with local environmental laws.**

**Gasoline, Diesel Fuel, Automotive Supplies, and Fuel Additives**

**All of the chemicals in this category are Highly Flammable and Highly Combustible (explosive fumes). They are also All heavier than air to one degree or another meaning the fumes will spread a great deal.**

1. **Alert everyone in the area of the spill,**
2. **Put on required P.P.E.,**
3. **Eliminate all sources of ignition,**
4. **Dike the spill to contain it,**
5. **Use Absorb-All to absorb the spilled fuel,**
6. **Scoop it up with a plastic scoop to avoid creating sparks,**
7. **Dispose of according to local regulations,**
8. **Ventilate the area to remove the fumes.**

**Anti-Freeze Products**

**Anti-Freeze and anti-freeze products such as windshield washer fluids are generally not a dangerous chemical unless ingested. The fumes of these products are normally not more than a mild irritant. They can pose a mild skin irritant as well. The fumes only become dangerous when heated. For spill cleanup it is recommended that gloves be used.**

**Solvents, Degreasers, and Adhesives**

**Adhesives such as contact cement, solvent cement, J. B. Weld, Loctite, and silicone sealants do not pose a great threat because they come in small quantities. They can all be wiped up using rags and the residue can be cleaned up using a solvent wet rag. Ventilate the area after solvent is used to prevent any flash fires. Once the product has dried or the solvent evaporated, these rags can be disposed of in normal garbage.**

**Solvents and Degreasers: are not all flammable but they are all acidic (acid) or caustic (heavy base). As such it is necessary to use chemical resistant gloves. Always use a plastic or non-metal scoop to avoid causing sparks which lead to fires and explosions.**

**For step by step cleanup instructions see Deoxidine, Acid Clean, Gunwash, Reducers on Page 6 of this guide.**

**\*\*Special Note\*\* LB-189a Burnishing compound requires that all tools that are used in the cleanup process be decontaminated before being put back into regular use. To decontaminate these tools it is necessary to rinse them thoroughly with water to remove any residue from Ethylenediaminetetracetic acid (harmful salts) which is the active ingredient.**

**Welding Gasses and Supplies, Propane, Natural Gas**

**Flammable and Explosive Gasses;**

**Flammable and explosive gasses fall under the Fugitive Emissions category. Typically there is no spill cleanup involved but can happen with some of the products because the tanks are filled with liquids that produce the required gasses when under pressure.**

**Propane (LPG - Liquid Petroleum Gas) is one of those. Most of these liquids will evaporate very quickly and cleanup will not be necessary.**

**Escaping gasses are extremely dangerous. All of these gasses are poisonous and require the proper organic respirator at a bare minimum, with an air fed respirator being highly recommended. Some gasses may require the air fed respirator as a minimum. Always refer to the MSDS for proper P.P.E. requirements.**

**Follow these steps;**

1. **If safe to do so shut off or stop the leak,**
2. **Alert and evacuate all employees in the area as well as your Supervisor and the H&S Coordinator,**
3. **Shut off all sources of ignition (with gasses even electronics such as radios or cell phone can ignite them) and evacuate the area,**
4. **Large leaks will require an evacuation of the entire shop and all ignition sources in the shop must be eliminated,**
5. **When the leak has been stopped or the tank has discharged all gas it is imperative that the entire shop be ventilated and all gas has been removed from the shop before it is safe to re-enter and resume work,**

**If the gas leak is from the buildings supply of Natural Gas the main supply shut off to the building Must be closed. The gas leak cannot be stopped otherwise.**

**The procedure here is the same as above except step 1 and step 2 change order of importance.**

**Inert Gasses**

**For inert gasses such as Nitrogen, Helium, and Argon you follow the same steps as above with two (2) main differences. 1- P.P.E. requirements, respirators, it Must be a fed air respirator. 2- Evacuation is important because these gasses eliminate oxygen and will cause people to suffocate.**

**Pastes, Layout Fluids, and Coolants**

**Pastes do not present any real hazards as the spill will be small and easily wiped up using rags and wearing gloves. Layout Fluids are aerosols and covered on Page 7 of this manual with this one exception.**

**Layout Fluid when heated or welded on will produce an extremely dangerous gas called Phosgene. Special care must be taken in such circumstances. The minimum requirement is to wear an organic respirator.**

**Coolants**

**Coolant, Low Conductivity (for Tig Welders)**

**I have separated this one specific coolant from the rest because of its distinct hazards. This has also made it necessary for its own list of required P.P.E. What makes this coolant unique from the rest we use here is that it is extremely toxic (poisonous) and *Cannot* be neutralized. The following is right out of the MSDS sheet. The portions that are in *Italic and underlined* are the areas that need special attention;**

**RELEASE RESPONSE: *Cannot be made nonpoisonous. In case of a release, clear the affected area and protect people. Spills will be slippery. Eliminate all sources of ignition before cleanup begins. Use non-sparking tools. Appropriately trained personnel in proper personal protective equipment, using pre-planned procedures should respond to uncontrolled releases.* The proper personal protective equipment for incidental releases (e.g., 32-ounce container) should be rubber gloves and goggles. In the event that cleanup will generate excessive splashes, a face-shield, boots, and chemical resistant body protection should also be worn. In the event of a non-incidental release (e.g., several 1-gallon containers released in a poorly ventilated area), *minimum Personal Protective Equipment should be Level B: triple-gloves (rubber gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hard hat, and Self-Contained Breathing Apparatus*. Monitor area for combustible vapor levels. Monitoring must indicate less than 10% LEL (refer to Section 5, Fire-fighting Measures) before emergency response personnel are permitted in the area. Monitoring must indicate that oxygen levels are above 19.5% before anyone is permitted in the area without Self-Contained Breathing Apparatus. *Absorb spilled liquid with activated carbon, polypads, or other suitable absorbent materials.* Decontaminate the area thoroughly. Place all spill residues in an appropriate container and seal. Dispose of in accordance with applicable U.S. Federal, State, or local procedures, or appropriate standards of Canada or EU Member States (see Section 13, Disposal Considerations).**

**To help mitigate the hazards mentioned above follow these steps;**

1. **Ensure adequate ventilation is brought into the area,**
2. **Dike the spill to Ensure it does not enter any water source. i.e. sewer system, creeks, or ground water source,**
3. **Ensure a buddy system is used as an extra precaution.**

**Cleaners and Soaps**

**Cleaners and soaps do not have any harsh or unusual hazards. As some are purchased in concentrated formulas the only inherent danger is skin irritation. Ensure you wear gloves when cleaning up the spill. All rags used to wipe up the spill can be discarded by regular means.**

***If anything has been overlooked or omitted from this document please notify the H&S Coordinator and it will be amended immediately.***