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Instructions for Safe Storage and Management of On-Farm Fuels and Chemicals

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The goal of this fact sheet is to provide producers with tips related to the safe storage and management of their fuel, pesticides and fertilizers on their facilities. The use of the following information will assist producers in responsible environmental stewardship. Several of these tips are common sense. This checklist should enhance producers' awareness of their responsibilities and help protect them from risk and maybe from legal actions. It is advisable that producers incorporate their future business operation plan into this list. A well-prepared business and operation plan could lead to enhanced safety in the producer's business.

Housekeeping

The cleanness of any facility reflects the professionalism of the business management as well as its accountability to customers, neighbors, the general public and regulatory officials. Good housekeeping creates an immediate positive impression, while poor housekeeping (i.e., untidiness, disorder, poor storage of materials and stock or sloppy appearance) may indicate potential problem areas. Accordingly, producers may use the following tips:

1. Prevent rainwater from running off containers onto the ground. This will prevent some undesirable residuals from being washed off.
2. Check tanks on a regular basis for cracks, leaks, sludge and rust.
3. Clean mixing, loading and storage areas on a daily basis or immediately after each use.
4. Clean up pesticide leaks and spills instantly.
5. Collect storm water and use it as makeup water or dispose of it properly.
6. Cover sumps when they are not in use to prevent them from collecting trash, dirt and debris.
7. Keep a spill cleanup kit near the mixing and loading areas for quick, efficient cleanup of spills.
8. Mix only the amount of pesticide that will be used.
9. Rinse container caps and outside of the containers to remove pesticide residues.
10. Rinse the empty containers about three times and store them in a protected dry area before discarding.
11. Segregate and label rinse water by commodity so it can be used as diluent in future loads.
12. Use separate containers to catch drips when connecting or disconnecting hoses.
13. Use special connectors (i.e., dry break connectors) on hoses that are regularly connected.

Handling and Storage

Prevention of air and water contamination should be the highest priority on the facility. This should be achieved while increasing the overall efficiency of the facility.

1. Contain leaks and spills by using tarps, plastic sheets or catch pans under fertilizer conveyor transfer points.
2. Contain small-volume containers (up to 5 gallons) in a rubber tub containment.
3. Display appropriate warning and hazard signs on storage facilities.
4. Do not store liquid pesticides above dry pesticides. Store them in separate areas.
5. Do not use open transfer handling of pesticides for worker safety.
6. Keep all pesticide containers closed.
7. Maintain a thorough diagram of inventory storage places with appropriate local emergency police and firefighting personnel.
8. Operate all containment sump pumps manually unless authorized otherwise by state regulation.
9. Place appropriate fire extinguishers outside and near the storage entrances.
10. Store pesticides and fertilizers in separate containments.
11. Update the inventory of each type and quantity of chemicals at the fire department. Update the inventory once again whenever there is any major changes in the quantity or type of chemicals.
12. Use corrosion-proof metal shelving with a retainer lip at the front of each shelf.
13. Ventilate storage areas using explosion-proof electrical control wiring and fan motors with at least six air exchanges per hour.

Fuel Storage

Farm owners have to comply with the Spill Prevention, Control and Countermeasure (SPCC) regulation. This regulation is part of the Environmental Protection Agency (EPA) plan for aboveground fuel tanks. The following information will help farm owners understand the SPCC regulation and guide them to comply with this regulation. The main goal of the SPCC is to prevent oil from entering surface waters or nearby shorelines of the United States. The regulation addresses farms and businesses that store more than 1,320 gallons of oil or oil products in aboveground storage tanks/containers. “Oil” includes, but is not limited to:

- Waste oil
- Used oil
- Heating oil
- Diesel fuel
- Kerosene
- Gasoline
- Crop oil
- Adjuvant oil
- Lubricating oil
- Naphtha
- Mineral spirits
- Vegetable oil
- Animal fat
- Biodiesel blends
- Synthetic oil

The SPCC regulation includes appropriate secondary containment and diversionary structures, security measures, inspections and record keeping, and employee training.

EPA Regulation for Aboveground Fuel Tanks

To determine if a certain farm or business must comply with this regulation, farmers should add up all the storage capacities of their containers (tanks, drums, totes, etc.) that can hold 55 gallons or more, even if empty. If the total is 1,321 gallons, which exceeds the threshold of 1,320 gallons, farmers are required to observe this regulation at their facilities. For example: a farmer has two 55-gallon drums of oil in the shop, a 500-gallon diesel tank, a 500-gallon gasoline tank and an empty 500-gallon tank for storing off-road diesel during the planting and harvest seasons. Therefore, the total capacity is 1,610 gallons which exceeds the 1,320-gallon threshold, so this farmer must comply with the federal SPCC requirements.

Spill Prevention, Control and Countermeasure Plan

Producers need to prepare, implement and maintain an SPCC Plan. They also need to have their plan certified by a Professional Engineer (PE).

1. If the farm has oil storage capacity between 1,320 and 10,000 gallons in aboveground containers and the farm has a good spill history, the producer may be qualified to self-certify his/her amended Plan. The Plan template is available on the EPA’s website (see the section “More Sources” in this fact sheet).
2. If the farm has a storage capacity of 10,000 gallons or more, or has had an oil spill before, the producer needs to prepare an SPCC Plan and have it certified by a licensed Professional Engineer (PE).

Oil and Fuel Spill Issue

If a producer has fuel or oil discharge to waters or adjoining shorelines, he/she should notify EPA regional office in writing in the following two cases: (1) the amount of oil spilled into water is > 42 gallons

in two incidents within a one-year period or (2) the amount of spilled oil to water is > 1,000 gallons in one single event. To avoid oil and fuel spill issues, producers should follow the subsequent tips:

1. Call and inform the National Response Center (NRC) at 800-424-8802.
2. Document and maintain the design specifications and periodic fuel volume in a permanent file following the state and federal regulations.
3. Ensure that workers have access to the Material Safety Data Sheets (MSDS) for all hazardous materials used at the facility.
4. Inform all employees to stop smoking or eating during handling fuels or pesticides.
5. Implement spill cleanup and mitigation processes outlined in the plan.
6. Locate all on-site fuel tanks above ground in a secondary containment or use tanks with built-in secondary containment.
7. Make sure that the National Fire Protection Agency (NFPA) Fuel Warning and the No Smoking signs are in place at fuel storage facilities.
8. Make sure that underground oil and fuel storage tanks have corrosion protection and leak detection systems.
9. Protect fuel and chemical product tanks and piping from vehicle collision damage.
10. Register underground oil and fuel tanks. Maintain appropriate measures and documentations according to state and federal laws.
11. Start the SPCC Plan actions to prevent the oil spill from contaminating a creek or river.

Dry Fertilizer Storage

Keep pesticides and fertilizers in separate containments. It might be acceptable that fertilizer containment overflows drain into pesticide containment. On the other hand, it is prohibited that pesticide containment overflows drain into fertilizer containments.

1. Collect contaminated rainwater and apply as a product.
2. Cover dust in storage and transfer areas.
3. Maintain and clean the storage areas on a daily basis or after each use.
4. Recover and use any spilled product immediately.
5. Separate rainwater away from the fertilizer storage area.
6. Store all dry fertilizer products under roof.
7. Use containment to hold dry fertilizer in handling areas.

Liquid Fertilizer Storage

1. Dry all the tank bottoms. Producers may place the tank on 6 inches of loose pea gravel in a containment ring. This might keep the main floor dry.
2. Install a fence around the storage area with an organized access.
3. Shut off the tank openings.
4. Use secondary containment for liquid fertilizer tanks. Select the containment size the same as outlined in the pesticide section below.

Pesticide Storage Safety

As with any other on-farm chemicals, pesticides need the attention of producers during their handling. The following tips will emphasize some important factors that might help during the management and storage of pesticides.

1. Clean up contaminated pad area and repair any damage quickly.
2. Clear out spills immediately and appropriately dispose of the waste.
3. Collect and store rainwater from diked areas. Producers might use it in future application blends or mixes. Alternatively, producers can pump the stored clean rainwater out if this practice is allowable by regulations in the area.
4. For a containment area not under roof, the containment volume should hold 125 percent of the volume of the largest tank in the containment area, including the displaced volume of all tanks in the area, plus freeboard (6 inches is typical), plus rainfall amounts as prescribed by your state regulations, usually a 25-year storm.
5. Have a logbook and file your inspection factors (i.e., time, date, place, conditions, etc.).
6. Inspect the storage area on a daily basis to check for leaks and spills especially during the application season. Following, perform the inspection on a weekly or bi-weekly basis.
7. Keep a spill collection sump, a sump pump or a transfer pump, a suction hose and a holding tank in the containment area. It is advisable to have a transfer suction pump dedicated to each product type. This may be useful when product cross-contamination is a concern.
8. Make sure that the pesticide secondary containment tank under roof holds a containment volume of at least 110% of the largest tank in the containment area. It should not include the displacement volume of all tanks and equipment in the area.

9. Make sure to store chemicals inside a diked containment area under roof.
10. Place the transfer pumps, pipes, hoses and valves within a containment structure above the highest anticipated flood or spill level. This simplifies inspection and operation.
11. Plan to roof the pad if the pesticide containment area is outside. This roof might help to eliminate storm water accumulation.
12. Prevent potential contamination of animal feed, grain, fertilizer or other materials by storing all pesticides in a separate and isolated area.
13. Protect packaged chemicals in a secure building designed with at least a 6-inch depth internal containment that could hold water or other chemicals used in fire extinguishing.
14. Segregate flammable and combustible materials from all ignition sources.
15. Stack all pesticide mini-bulk tanks in a pesticide storage containment area to avoid accidental runoff or drainage into streams, ditches or wellheads.
16. Try to use stored rinsate and storm water as soon as possible in suitable product mixes. It is advisable to mix 1 part of rinsate to 4 parts of clean water. Check state regulations regarding rinsate concentrations allowed.

Mixing-Loading Areas

1. Add labels for all stored products and rinsate.
2. Ensure that the ventilation of the mixing areas is capable of aeration with at least six air changes or more per hour for pesticide handling.
3. Load chemical products over a containment load pad with a collection sump.
4. Make sure that the load pad containment system is capable of handling 110% of the volume of the largest truck or applicator vehicle if under a roof or 125% if not roofed.
5. Mix and load pesticide and fertilizer products in a common containment area. Store the equipment in separate containments.
6. Post warning signs regarding hazardous chemicals and non-smoking areas at all entrances and exits to a building.

Rinsate Handling and Reuse

Rinsate is a blend of pesticides diluted by water, solvents, oils, commercial rinsing agents or any other substances. It is produced from cleaning pesticide application equipment or pesticide containers.

1. Store the rinsate in an aboveground tank for a short time until it can be used on another job requiring that chemical. Do not use underground storage. Continuously monitor the tank size and time allowances in the state.
2. Clean exterior equipment on the mix and load pad. Collect the rinsate and spray on an approved target even though external rinse water has been defined as nonhazardous. Clean pad thoroughly after washing down.
3. Clean rinsate tanks carefully before using them for different crops or chemicals that might react with each other.
4. Collect and segregate rinse in holding tanks dedicated and marked according to the application if spray equipment is rinsed at the facility. This might avoid cross-contamination damage from pesticide.
5. Rinse hopper, plumbing and boom equipment over the application site. Apply the rinsate to the target application while at the site. This might avoid rinsing the equipment in other locations.

Site Safety

Good safety measures are the best protection against problems caused by accidental or intentional damage by unauthorized personnel at any facility.

1. Eliminate containment drain lines. Never use septic systems with leach fields in the disposal of any liquid that may contain agrichemical contaminants.
2. Install automatic sensors for worker protection and to minimize vandalism at containment and mix and load facilities. These sensors may also be used to trigger some alarm if needed.
3. Lock all gates and doors when the facility is unattended.
4. Mount adequate lighting in storage and handling areas.
5. Post signs at the main entry to the facility signifying that all persons must sign in the logbook at the main office immediately upon arrival. This will allow producers to know who is on the site and to provide proper assistance.
6. Protect all valves on bulk product tanks with locks.
7. Secure sight gauges on storage tanks with bottom valves that are normally turned off and locked.
8. Secure sump pumps in the containment locations.
9. Setup a security fence, locked storage building and other means of preventing unauthorized public access to the property.

10. Store application equipment containing product that is stored overnight on a rinse pad, secured and equipped with locked discharge valves.

Compliance with Regulations

It is essential to obey and comply with regulations by documenting the environmental and safety activities. Document and maintain these files carefully. Apply for all proper permits. On-site inspector approval may be required.

1. Develop a schedule for re-registering or renewing permits, licenses and other documents on time and keep current.
2. Develop an emergency action plan. This plan should include:
   a. Storage building contents and storage patterns,
   b. Site plans,
   c. Emergency and accident procedure plans,
   d. Hazardous communications plans,
   e. Emergency phone numbers,
   f. Special firefighting procedures,
   g. Firefighting water runoff control, and
   h. Location of external utility shut-offs.
3. Document construction, environmental and other permits for easy access.
4. File and maintain underground storage tank registration, certification and leak test results for easy retrieval.
5. File and maintain records of safety training, emergency response drills and professional education meetings as well as subjects and attendance.
6. Have the facility employees sign the appropriate form indicating that they have attended hazardous material training sessions and understand all applicable Material Safety Data Sheets.
7. Keep files with photos and videos of training exercises wherever appropriate.
8. Make sure that all required pesticide licenses are current.
9. Review permit conditions routinely for compliance.
10. Use bold placards for safety and identification of specific areas.

Personal Safety

1. Aerate the storage areas using explosion-proof electrical control wiring and fan motors with at least six air exchanges per hour.
2. Allow easy access to emergency shower and eye flush fountains. These should only be used for emergencies and should trigger an alarm when used.
3. Allow office or non-storage areas with separate exit doors from pesticide storage rooms.
4. Change clothes before leaving work from chemical sites.
5. Install a telephone near pesticide storage buildings with a list of appropriate emergency phone numbers. Alternatively, store these important numbers on a personal cell phone.
6. Provide proper personal protective equipment at each site for each employee as required by the Worker Protection Standards.
7. Store pesticides lower than 66 inches from floor level.
8. Train all staff on the use of appropriate protective gear and equipment for handling products.
9. Use a separate washer and a dryer at the site to avoid carrying possible contaminated clothing home and mixing with family laundry. Hang clothing outside in direct sunlight and wind to dry when possible.
10. Use appropriate face shields or goggles, long-sleeved shirts, rubber gloves, rubber aprons and boots when loading and mixing pesticides.
11. Use closed mixing and transfer systems for pesticide handling safety.
12. Use effective detergents and hot water for washing contaminated clothes. Run the washer with detergent and hot water empty for one cycle to clean after washing contaminated clothing.
13. Use safety equipment and clothing and laundry practices to protect employees and families involved.

Water Supply Safety

Producers should protect the potential susceptibility of their water supplies as well as their neighbors' water supplies. Taking accurate measures to protect the water supply from inadvertent, accidental contamination regardless of the source of water at the facility is a vital process and could be accomplished through the following tips:

1. Determine the location of all private and public water supply wells close to the facility (at least within one mile).
2. Examine on-site water wells by sampling each year and analyzing for the type of chemicals handled at the facility.
3. Identify the depth to groundwater, soil permeability and the general direction of groundwater flow under the facility.
4. Mix and load chemicals away from water wells (at least 50 feet). This minimum distance may need to be adjusted farther away depending on the terrain and variables involved with each site.

5. Protect the on-site wells and water sources against back-siphoning. This could be accomplished by using backflow double check valves, air gaps or any other accepted safety devices.
6. Raise the wellheads to prevent spills or surface runoff from entering the wells.
7. Upgrade all water sources to avoid potential spillage contamination.
8. Use a licensed plumber to install and to provide annual inspections. Keep accurate records of part numbers, installation inspection dates, etc.

SARA Title III Reporting

The Superfund Amendments and Reauthorization Act is distinct law unto itself which is generally identified as SARA Title III. It sets the requirements for local and state emergency planning around hazardous chemicals. It also sets the right of the public to access information on chemical hazards in their community. SARA Title III requires certain facilities to report both routine and accidental chemical releases.

1. Check your facility subjection to Section III reporting. Check also to see if you have to submit an Emergency and Hazardous Chemical Inventory Form each year.
2. Document the required notifications under SARA Title III with the appropriate agencies. Check with your state pesticide coordinator.
3. Facilitate SARA Title III Documentation by organizing and labeling stored products.
4. Maintain accurate inventory and production records.
5. Maintain copies of the required reports at the facility.

Summary

The benefits of the previous lists are that they will enhance the farmers' and producers' awareness of safe storage and management of on-farm fuels and chemicals. This publication is not proposed to be a complete listing of everything that must or should be done or accomplished. It should be mentioned that producers need to identify areas of their existing facilities that require updating and improvement, or they may decide that a new facility is needed.

More Resources

- Emergency Response: http://www.epa.gov/emergencies/spcc
- Oil Spills Prevention and Preparedness Regulations Template: http://www.epa.gov/oem/content/spcc/tier1temp.htm
- Underground Storage Tanks (USTs): https://www.epa.gov/ust/secondary-containment-and-under-dispenser-containment-2015-requirements
- Aboveground Petroleum Tanks: A Pictorial Guide: https://www.extension.purdue.edu/extmedia/PPP/PPP-73.pdf
- SARA Title III Section 313 – Toxic Chemical Release: Reporting Requirements http://www.gecap.org/pdf/sara313.pdf
- Safe Use and Storage of Chemicals (Including Pesticides and Herbicides) in Agriculture: http://www.safework.nsw.gov.au/__data/assets/pdf_file/0004/52870/Safe-use-and-storage-of-chemicals-including-pesticides-and-herbicides-in-agriculture.pdf

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