



## Protecting Chemicals in Flood and Storms

Fertilizers, pesticides, fuels, oils, solvents, and other chemicals stored on farms, golf courses, farm supply stores, pest control businesses, home and garden centers, nurseries, greenhouses, and other agricultural sites pose a potential hazard to the environment and to public health during any severe weather event. Containers may be punctured and leak, and drums or jugs may be swept away. As a result, water supplies may become contaminated, and pesticide containers may endanger people who find them. Preparation is the best defense to prevent these situations from occurring.

### Before the Storm

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- Before a storm ever appears on the horizon, you should have a plan for dealing with disasters for your storage area and your business or home. An excellent resource for emergency planning is available through [READYVIRGINIA.GOV](https://www.readyvirginia.gov), a service of the [Virginia Department of Emergency Management](https://www.virginia.gov/emergency). Make sure your insurance company is part of this plan. Keeping your insurance up-to-date is critical to protect you from losses. Make sure you share a detailed inventory of your stored chemicals, including receipts, with your insurance agent.
- Most chemicals should be stored away from your living and working areas. To avoid complications from weather events, avoid locating chemical storage areas in a floodplain or less-sheltered areas where wind could easily damage a building. Maps are commonly available that show the location of the 100-year floodplain in most areas. Knowing this information is a good way to prevent a problem in most flooding situations.
- Storage areas should also be located downwind and away from sensitive areas such as homes, schools, streams, ponds, and any area that might impact people and animals.
- Building design has a great deal to do with prevention of damage by the wind and water. Choose designs that can resist high winds that might damage a roof and lead to the building collapse. Proper drainage around a building is important to keep floodwaters in check. Flash flooding can occur anywhere, so don't think that locating a building away from a floodplain solves all potential flooding problems. The [MidWest Plan Service](https://www.midwestplan.com) offers plans for pesticide and fertilizer storage buildings. Consult your [local Extension agent](#) for help with these and other plans for agricultural buildings. In addition, you should consider buying a pre-fab chemical storage building if you are seeking to build or upgrade your site. Pre-fab chemical storage buildings are far superior to stick-built buildings because they are specially designed to resist most problems associated with chemical storage and comply with regulations and insurance standards. References to pesticide storage technology of this type can be found [on this website](#).

- Keep your chemical inventory to a minimum by only buying what you need for one season. Consider contracting with a commercial applicator to do your application to eliminate storing most pesticides and fertilizers. Any chemicals you do store should be inventoried anytime you turnover items stored at your location. Keep the inventory list up to date and a copy available on site and a second copy at a safe location away from the site. Make sure you keep a paper copy of the inventory. If the power is out, a computerized inventory system becomes useless.
- Learn about the weather. Doing so will help you understand the prediction system used by the weather service. Install a [NOAA weather alert radio](#) that keeps you up-to-date on weather emergencies. This is particularly important if you live in a storm- or flood-prone area. If you have web access you should monitor the weather on the National Weather Service website at [WEATHER.GOV](#). This site has access to your local weather and to the [National Hurricane Center](#) to monitor tropical systems that might require days of preparation on your part before they enter your local area.
- If your storage is already located in a vulnerable area, try to move chemicals to higher ground. If that isn't possible, you may be able to minimize water damage by moving chemicals off floors and from lower shelves to a higher, but appropriately safe, location in the building or elsewhere on-site.
- Shelving areas should be anchored to prevent them from tipping over from wind or water movement through the building. Turn off the building's electricity; plug drains leading from the building if you think water will enter the building through them or if you think pesticides can escape through them to the environment. If plugging drains will make the flooding in the building worse, move the pesticides to another location. If the drains lead to a sump, make sure the sump will not become buoyant and lead to building damage.
- Let local authorities know where your chemical storage areas are located before a potential disaster event starts to develop. Before the event, make sure the building is well marked as a chemical storage building. Make sure the building is well-secured and locked before evacuation.

## After the Storm

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- Check the building for water and wind damage, for fumes, and for poisonous snakes and harmful insects before entering.
- If the building is damaged, don't enter it without protective clothing and equipment.
- If you know there are damaged containers in the building, get help from local authorities. Do not enter the building.
- If containers have been washed or blown out of the building, restrict entry to the affected area to prevent exposure to humans and animals. Get help to clean up the materials to prevent further pollution.
- Check all pastures and feeding areas before turning animals loose after a storm. As was the case in the example cited above, had the grower checked this area, he might have saved his cattle.
- Be prepared to contact authorities to report spilled quantities of chemicals and to request assistance.
- **For all emergencies**, please contact local emergency services by dialing **911** to report incidents and to get help.



# Virginia Cooperative Extension

Virginia Tech • Virginia State University

- **In Virginia**, spills and pesticide incidents affecting the public, must be reported (by authority of law) to the Virginia Department of Agriculture and Consumer Services - Office of Pesticide Services within 48 hours. Their phone number is (804) 371-6560.

## Links

[Plan Today For Tomorrow's Flood...](#)A Flood Response Plan for Agricultural Retailers. Purdue University Pesticide Programs.

[Pesticides and Storms](#)

What to Do About Your Pesticides Before a Storm -- Clemson University

[Storm-Damaged Agrichemical Facilities](#)

Guidelines to secure pesticides and other agricultural chemicals subjected to severe storm conditions. -- University of Florida

[Key References to Pesticide Storage Information](#)

Collection of references from [pesticidelinks.org](#) -- Virginia Tech Pesticide Programs

[Hurricane Emergency Preparedness for Virginia](#)

Latest information on emergency situations and advice relating to preparedness -- Virginia Department of Emergency Management

[VDACS Office of Pesticide Services](#)

The Office of Pesticide Services provides support to VDACS and the Virginia Pesticide Control Board. By certifying applicators, registering pesticide products, and issuing pesticide business licenses, we permit the safe and effective control of pests that attack our crops, structures and health and that of our domestic animals.

[Virginia Department of Emergency Management](#)

The Virginia Department of Emergency Management – Protecting the lives and property of Virginia's citizens from emergencies and disasters by coordinating the state's emergency preparedness, mitigation, response and recovery efforts.

[VDEM Photo Archive](#)

A photographic record of floods and natural disasters in Virginia (part of the Virginia Department of Emergency Management website).

[Virginia Floodplain Management Association](#)

The Virginia Floodplain Management Association (VFMA) is a group of professionals representing state and federal agencies, local government officials and private firms dedicated to expanding the application of proactive floodplain management in the Commonwealth of Virginia.

[FEMA](#)

Federal Emergency Management Administration

[FEMA Map Service Center](#)

Floodplain maps.

[FEMA Grants & Assistance Programs](#)

Help with FEMA Assistance.

[FEMA's Ready Website](#)

Federal Emergency Management Administration Preparedness

[US Army Corp of Engineers](#)

Information on the Corps role in maintaining rivers and waterways.

[US Army Corp of Engineers - Norfolk](#)

Corps in Norfolk

[US Army Corp of Engineers - Wilmington](#)

Corps in Wilmington

[US Army Corp of Engineers - Huntington](#)

Corps in Huntington

[US Army Corp of Engineers - Baltimore](#)

Corps in Baltimore

[National Weather Service](#)

NOAA-NWS

[National Hurricane Center](#)

NOAA-NHC

[Severe Storms Prediction Center](#)

NOAA-NWS Severe Storms Prediction Center in Norman, OK

[NWS - Blacksburg](#)

NOAA-NWS Blacksburg, VA office

[NWS - Baltimore/Washington](#)

NOAA-NWS Baltimore/Washington office

[NWS - Wakefield](#)

NOAA-NWS Wakefield, VA office

[NWS - Morristown](#)

NOAA-NWS Morristown, TN office

[NWS - Charleston](#)

NOAA-NWS Charleston, WV office

[USGS - Virginia Water Flow Data](#)

US Geological Service - Water Flow Data

[VDEM Grant Information](#)

Virginia Dept. of Emergency Management Grants Assistance Office

[VDCR Floodplain Management](#)

Virginia Dept. of Conservation & Recreation, Floodplain Management

[Association of State Floodplain Managers \(ASFPM\)](#)

Virginia Floodplains Management Association

[Association of State Floodplain Managers \(ASFPM\)](#)

Virginia Floodplains Managers