



Secure Pesticide Storage: Essential Structural Features of a Storage Building¹

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This document identifies and describes five structural features that should be present in any building constructed for pesticide storage.

Introduction

The main job of a pesticide storage facility is to suitably house and protect packages of pesticide. To do this in Florida, the facility should provide:

- spill containment
- weather shelter
- vapor venting
- heat relief
- an ergonomic doorway

Spill Containment

*Spill containment means keeping any leaked or spilled pesticide **inside** the storage facility. The idea is to not allow a chemical to get out of the facility on its own. Even if it leaks from its jug, bag or box; the pesticide stays in the storage facility.*

Spill containment starts at the floor. Make sure the storage facility's floor has no openings (no drains, no cracks, no joints.) Make sure the floor is non-absorbent.

Steel and high density polyethylene are both excellent materials for pesticide storage facility floors. Concrete is also suitable, if it is properly sealed with a thermosetting resin sealer. Avoid urethane-based and latex-based sealers. These sealers wear quickly and often do not hold up under chemical attack. Wood is a poor choice for storage facility flooring.

Spill containment also influences wall and doorway design. Pesticide storage facility walls and doorway thresholds should be *spill-containing*.

To make the walls and the doorway threshold spill-containing, ***surround the floor with internal curbing***.

Make the curbing from the same material as the floor. If made of concrete, seal it with the same thermosetting resin (for example: epoxy phenolic, epoxy novolac, or vinyl ester) used to seal the floor.

1. This document is Fact Sheet PI-30, part of a series from the Pesticide Information Office, Food Science and Human Nutrition Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. For additional information, contact the Pesticide Information Office, University of Florida, P.O. Box 110710, Gainesville, FL 32611-0710, (352) 392-4721. Published: April 2004. Revised: November 2004. Please visit the EDIS website at <http://edis.ifas.ufl.edu>.

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Make the spill-containing curb at least 3 inches high. (In a 10'x12' building, a 3 inch internal curb around the floor provides about 225 gallons of spill containment.)

A spill-containing curb prevents spilled pesticide from leaking through any air space (crack) under the door. It also prevents spilled pesticide from seeping through the storage facility's walls.

When constructing a new concrete-floor building, an easy way to build a spill-containing curb is to increase the poured footer height to 3 inches above final floor surface.

Weather Shelter

Weather shelter means protecting the stored pesticides from wind and rain. In Florida, this is usually best done by ensuring two things:

- the storage facility is a fully enclosed structure (i.e., walls, roof, door)
- the structure meets or exceeds Florida Building Code specifications.

Vapor Venting

Vapor venting means removing chemical vapors and their odors as they collect in the storage facility. Anyone who has ever stepped inside a pesticide storage building knows that odor.

Virtually all pesticide vapors are heavier-than-air. In the calm air of a storage building's interior, pesticide vapors settle toward the floor and accumulate.

The idea is to **let pesticide vapors escape as they form**. Vapor escape is almost certain if the storage facility's walls contain louvered vents.

Locate vapor vents on at least two opposing walls. This will encourage cross-ventilation air flow across the storage facility's floor.

Position each vapor vent 8 to 12 inches above the top of the spill-containing curb. This height is a good compromise between going as low as possible and providing enough intact lower wall to overcome most flood-water problems.

Heat Relief

Heat relief means protecting stored pesticide from daily temperature buildup within the storage facility. In Florida, this can be achieved by:

- attic ventilation
- high-reflectance roofing
- low-absorption colors

Equip the storage facility's roof with **gable-end louvers and off-ridge roof vents**. In Florida, even when roof vents are present, electrically-powered roof fans are sometimes necessary.

Do not install dark-colored roofing. Instead, **roof a pesticide storage facility with light-colored shingles or bright-plate zinc-coated steel**. Light-colored materials reflect sunlight (rather than absorb it). The practical result is a cooler building.

Paint the building's exterior white. White walls reflect sunlight. This helps reduce daily heat buildup in the storage facility.

Ergonomic Doorway

An **ergonomic doorway** means a doorway specifically designed to make a work task easier to do well.

Most doorways are designed for *people* to easily enter a room or building. However, this doesn't necessarily best serve pesticide storage facility needs.

A pesticide storage facility's door must allow a person carrying **cargo** (e.g., containers of pesticide) to easily enter or exit a room or building.

The three features of door design that most influence cargo handling are:

- doorway width
- door swing control
- doorway floor surface

Doorway Width

A storage facility worker should never have to wrestle pesticide-containing parcels through a doorway. A wide doorway reduces the chance of a spill-producing accident. In general, wider is better. Storage facility *doors should always be at least 36 inches wide.*

Wider (48 to 72 inch) doorways are necessary if machinery (fork lifts, pallet jacks, dollies, etc.) is to move large-container cargo (e.g., minibulk containers) into the pesticide storage facility.

Door Swing Control

Controlling the swing of the storage facility's door reduces the chance of pesticide spills.

The idea is to *keep the door from prematurely closing* on a user trying to carry a load through the doorway.

Door swing control is easy to accomplish. Examples include foot-operated doorstops, hydraulic door swing dampers, and wall-mounted hooks. All are effective ways to keep a door from closing prematurely. Make sure the pesticide storage facility's door is fitted with a device that controls door swing.

Doorway Floor Surface

Moving containers of pesticide in or out of a storage facility demands sure footing. Sure footing at the doorway is best provided when the doorway floor is a *non-skid surface.*

Ways of providing a non-skid floor at the storage facility doorway include:

- using broom-finished concrete
- applying a grit-filled floor coating
- installing anti-slip flooring strips

These differ mainly in durability and cost.

By itself, an anti-slip coating on the doorway floor is a small point. However, small does not mean insignificant. In pesticide storage facilities,

seemingly small details combine to yield the desired end product: secure pesticide storage. Having an anti-slip surface at the facility's doorway is a good example of this.

The storage facility doorway is an especially vulnerable area. It's the "meeting place" of spill containment and the unprotected outside world. Any container-handling accident that occurs at the doorway and results in spilled pesticide has a 50-50 chance of being contained by the building. (The other outcome is a pesticide chemical release to the environment.)

Having anti-slip flooring at the doorway is a simple structural feature. Although simple, it reduces the likelihood of a pesticide container accident occurring at this vulnerable place.