

## Secure Pesticide Storage: Essential Structural Features of a Storage Building<sup>1</sup>

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Thomas W. Dean<sup>2</sup>

*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.

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2. Thomas W. Dean, Ph.D., assistant extension scientist, Pesticide Information Office, Food Science and Human Nutrition Department, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 32611-0710.

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.