

## Best Management Practices for Pesticide Storage

### Rationale

Greenhouse pesticide storage areas can contain a wide range of concentrated chemicals, some in relatively large quantities. These chemicals must be stored and managed properly to prevent the potential release, through broken, damaged or leaking containers, of chemicals that may have the potential to cause harm to human health and the environment. Some potential problems associated with pesticide storage areas include

risk of spills during storage, mixing or loading operations; loss of security; accumulation of unwanted, old, or unregistered materials; and the risk of fire, flooding or some other disastrous event. These problems can be minimized through the proper use of building security, temperature control, fire prevention and suppression equipment, inventory control, secondary containment, emergency mitigation/planning, preventive maintenance, good housekeeping and user education.

**Environmental Principle:** Greenhouse pesticide storage areas contain relatively large quantities of concentrated chemicals. These chemicals must be stored and managed properly to prevent the possibility for release to and contamination of the environment.

Operational Aspects	Environmental Assurance >>		
	Level 1	Level 2	Level 3
<b>Overview</b>			
Emergency Preparedness	all staff know to call 911 in the event of an emergency	emergency contact numbers posted; all staff trained to call emergency contact numbers; staff have basic training in cleaning up small pesticide spills	emergency contact numbers posted; all staff trained to call emergency contact numbers; staff have basic training in cleaning up small pesticide spills; emergency response plan located in storage area and on file with emergency contacts; staff trained to respond to different emergency scenarios
Environmental Awareness	staff are aware of hazards to the environment associated with pesticide spills and cross-contamination; hazards corrected when a problem occurs	staff are aware of hazards to the environment associated with pesticide spills and cross-contamination; hazards are actively reduced	staff are aware of hazards to the environment associated with pesticide spills and cross-contamination; hazards are identified and corrected; staff monitor regularly for new hazards

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Training	staff learn through on-the-job training with other staff members	staff receive instruction from experienced users regarding proper pesticide storage management activities	all staff who work in the pesticide storage area with pesticides and/or application equipment are trained by supervisor, qualified personnel and by attending continuing educational training opportunities as required by NYS DEC pesticide certification and the Cornell Health and Safety Policy 2.4; pesticide storage policy reviewed with staff
Communication	pesticide storage guidelines are posted and sometimes discussed during training sessions	pesticide storage guidelines are discussed on a regular basis with greenhouse staff	greenhouse staff gain knowledge of pesticide storage best practices through attendance at training programs, peer discussions, staff meetings, and work experiences
<b>Management</b>			
Inspection	inspection of pesticide storage area performed when a problem arises	regular inspection of pesticide storage area performed	regular inspection of pesticide storage, mixing/loading and facility areas performed; problems noted and addressed
Records Maintenance	pesticide storage facility documents not kept or posted	pesticide storage facility policy, emergency plan, emergency contact information and maintenance logs kept and posted, but not updated regularly	pesticide storage facility policy, emergency plan, emergency contact information and maintenance logs kept up-to-date and posted as appropriate
<b>Storage</b>			
Building Materials	common construction materials; no special properties; wooden shelves	some construction materials fire resistant; wooden shelves	almost all construction materials fire resistant; anti-spark electrical components; metal, water-resistant, or chemical-resistant shelves

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Chemical Compatibility and Segregation	pesticides and fertilizers stored in separate storage areas	pesticides stored in storage area; pesticides stored by hazard class and pesticidal function with incompatible materials stored physically separated from one another	pesticides stored in storage area; pesticides stored by hazard class and pesticidal function with incompatible materials stored physically separated from one another; flammable and combustible liquids stored in separate area; herbicides separated from fungicides and insecticides; potentially reactive materials separated from other materials by some physical barrier; designated “disposal” area for surplus pesticides and empty containers being held for disposal
Containers	all chemicals stored in their original containers unless damaged; labels are visible and readable; caps are secure; food or beverage containers are never used for storage	all chemicals stored in their original containers unless damaged; labels are visible and readable; caps are secure; food or beverage containers are never used for storage	all chemicals stored in their original containers unless damaged; labels are visible and readable; caps are secure; food or beverage containers are never used for storage
Container Arrangement	labels in plain sight; some containers on floor; all containers stored up-right	labels in plain sight; no containers on floor; all containers stored up-right; aisles wide enough to accommodate workers; containers not crowded on shelves	labels in plain sight; no containers on floor; all containers stored up-right; aisles wide enough to accommodate workers; containers not crowded on shelves; pesticide inventory does not block vents in storage cabinets
Containment	no floor drain; some secondary containment used for open containers	no floor drain; secondary containment routinely used for open containers	no floor drain; floor provides containment in the event of a spill; secondary containment routinely used for open containers

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Contents	storage area contains pesticides, other greenhouse chemicals (but not fertilizers), various application equipment; the storage area NEVER contains: food, drink, tobacco products, personal protective equipment, livestock feed, living plants, and/or seeds	storage area contains pesticides, other greenhouse chemicals (but not fertilizers), various application equipment; the storage area NEVER contains: food, drink, tobacco products, personal protective equipment, livestock feed, living plants, and/or seeds	storage area contains pesticides, other greenhouse chemicals (but not fertilizers), various application equipment; the storage area NEVER contains: food, drink, tobacco products, personal protective equipment, livestock feed, living plants, and/or seeds
Fire Prevention and Suppression	multi-media fire extinguisher immediately available and inspected annually	multi-media fire extinguisher immediately available and inspected annually	flammable materials stored separately; multi-media fire extinguisher immediately available and inspected annually; sprinkler system may be present; fire department notified at least annually of current inventory; staff are trained on proper use of extinguishers
Inventory	no inventory kept; outdated materials occasionally removed	inventory updated at least once per year; outdated pesticides removed annually	inventory actively maintained as pesticides added or removed from storage; containers are dated when purchased; outdated pesticides removed on a regular basis (at least annually)
Lighting	electrical lighting with few limited areas of view	electrical lighting allows view into all areas and cabinets within storage area	explosion-proof electrical lighting allows clear view into all areas and cabinets within storage area
Location of Storage Area	area within building structurally segregated from general work areas; site not considered in selecting storage area	wing or corner on ground floor of a building dedicated to other purposes; some consideration given to location of storage area away from extreme heat, flooding and environmentally sensitive areas	building or area dedicated to chemical storage; separated from offices, workshops, laboratories, surface water; flooding unlikely; downwind and downhill from sensitive areas such as houses & ponds; soil, geologic and hydrologic site characteristics will not lead to contamination of any water systems through runoff or percolation

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Security	separate entry with door	lock on door; windows prohibit access; access restricted to trained personnel	all entries locked at all times; windows prohibit access; access restricted to trained personnel; procedure implemented to track keys to storage area or facility; may be fenced; no holes or entrances for rodents and other pests; cracks and crevices sealed
Signage	warning sign(s) posted, but emergency contact info not posted	warning sign(s) posted; emergency contact information posted	weatherproof warning sign(s) posted in view of entrances; emergency contact information posted
Spill Preparedness	spill clean-up materials (e.g., vermiculite, Slik-Wik®, or other commercial product) available within the general area; some staff trained in proper use of these materials	spill clean-up materials (e.g., vermiculite, Slik-Wik®, or other commercial product) available at the storage area; all staff trained in proper use of these materials	spill clean-up materials (e.g., vermiculite, Slik-Wik®, or other commercial product) available at the storage area; all staff trained in the proper use of these materials; hydrated lime or high pH detergent also available for neutralization; designated shovel, dust pan, broom and empty bags and/or buckets available for clean-up
Storage of Small Quantities of Chemicals	always stored on shelf or other solid surface; never on floor	always stored on shelf or other solid surface; never on floor	always stored on shelf or other solid surface; never on floor, or overhead
Temperature Control	no mechanical temperature control	No mechanical temperature control; area insulated; no direct sources of heat (sunny windows, steam pipes, furnaces, etc.); area will not freeze	active mechanical temperature control; no direct sources of heat (sunny windows, steam pipes, furnaces, etc.)
Ventilation	room not particularly cool and dry; no mechanical ventilation	mechanical ventilation working and used	mechanical ventilation working and used; switch for ventilation located outside storage area

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<b>Handling</b>			
Partially-used Containers	open containers resealed and returned to storage	paper bags and boxes always opened with a box cutter or scissors; open containers resealed and returned to storage	paper bags and boxes always opened with a box cutter or scissors; open containers resealed and returned to storage; all drips are removed from rigid containers; all open paper bags are placed inside another, larger container, sealed and labeled; open containers of chlorates are never kept in storage
Damaged Containers	when damaged containers are noticed, contents are repackaged and labeled or placed in suitable secondary containment which can be sealed and labeled	when damaged containers are noticed, contents are repackaged and labeled or placed in suitable secondary containment which can be sealed and labeled; secondary label may lack complete information	pesticide containers checked often for corrosion, leaks, loose caps, or bungs; when damaged containers are noticed, contents are repackaged and labeled or placed in suitable secondary containment which can be sealed and labeled; secondary label correct and complete
Disposal	unused pesticide products discarded in adherence with federal, state regulations and Cornell policy	transfer opportunities for registered, unused pesticide products are sought to minimize need for disposal; unregistered or unwanted pesticide products discarded in adherence with federal, state regulations and Cornell policy	sufficient planning is done to eliminate the need for disposal of excess pesticides; triple-rinsed empty pesticide containers are discarded according to current disposal regulations
Personal Protective Equipment - Worn in Storage	staff sometimes wear gloves in storage area	staff wear gloves in storage area when handling open containers or packages	employees wear gloves, chemically resistant boots, and protective eyewear in storage area when handling open packages
Personal Protective Equipment (PPE) Worn in Mixing Area	staff always wear protective gloves, chemically resistant boots, protective eyewear and respirators and/or other PPE as stated on the label when handling open pesticide containers	staff always wear protective gloves, chemically resistant boots, protective eyewear and respirators and/or other PPE as stated on the label when handling open pesticide containers	staff always wear protective gloves, chemically resistant boots, protective eyewear and respirators and/or other PPE as stated on the label when handling open pesticide containers

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Pesticide Mixing Area	area is ventilated, eyewash may or may not be easily accessible	area with good ventilation, adjacent to storage area, emergency shower and eyewash available in immediate vicinity	area with dedicated ventilation, adjacent to storage, emergency shower and eyewash; separate from production area but not isolated
Personal Protective Equipment (PPE) Storage	PPE, including gloves, aprons and respirators, is located in the general vicinity of the storage area; all those with access to storage know location of PPE and are familiar with proper donning, doffing, inspection and maintenance of PPE	PPE, including gloves, aprons and respirators, is located in the general vicinity of the storage area; all PPE stored away from pesticides; all those with access to storage know location of PPE and are familiar with proper donning, doffing, inspection and maintenance of PPE	PPE, including gloves, aprons and respirators, is located in the general vicinity of the storage area; all PPE stored away from pesticides; all those with access to storage know location of PPE and are familiar with proper donning, doffing, inspection and maintenance of PPE
Application Equipment Storage	all application equipment is stored in the chemical storage area or in another dedicated storage area	all application equipment is stored in the chemical storage area or in another dedicated storage area; all items used for handling pesticides are labeled “contaminated with pesticides” or otherwise clearly labeled to trained users	all application equipment is stored in the chemical storage area or in another dedicated storage area; all items used for handling pesticides are labeled “contaminated with pesticides” or otherwise clearly labeled to trained users