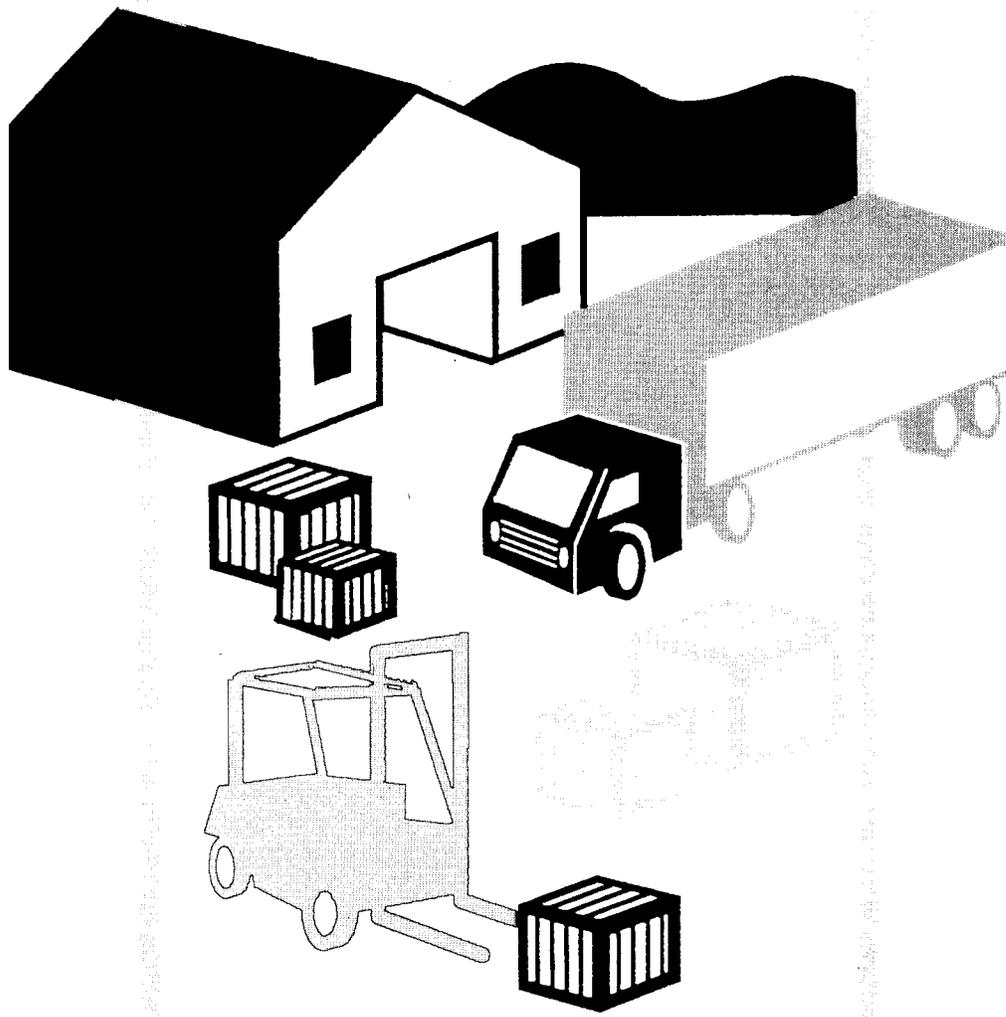


Fundamental Principles for Agricultural Chemical Storage



Midwest Agricultural
Chemical Association

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PREFACE

The purpose of this document, prepared by the Midwest Agricultural Chemical Association (MACA), is to provide the "fundamental principles" of package agricultural chemical storage and handling. These fundamental principles have been developed by MACA's Safety, Environmental and Distribution Committee and approved by MACA's Board of Directors after notice to the membership and the receipt and consideration of numerous comments from members and other interested parties.

This document reflects the views of its originators only and should not be considered or relied upon as the sole basis or reference for evaluating safety in any particular facility. This document can be used as a beginning point with respect to safety precautions; but this document does not reflect all of the laws and regulations which federal, state and local authorities may impose on package agricultural chemical warehouses. Warehouse operators and others are advised to consult federal, state, local, and any other applicable laws and regulations, which supersede the guidelines contained in this document.

MACA assumes no liability to any person or entity for any injury or damage, direct or consequential, which may be incurred from the use or application of any of the guidelines, whether singly or in combination, by any particular facility. Nor does MACA assume any responsibility for the unsuitability of any guideline as a result of inconsistency with or changes in the law or otherwise.

IMPLEMENTATION

The United States Environmental Protection Agency (EPA) is currently in the process of considering and promulgating rules which will be applicable to agricultural package storage facilities. The fundamental principles set forth in this document are intended to improve safety at agricultural package chemical warehouses and to enhance compliance with the rules which the EPA will eventually establish.

In order to provide a proper balance between the enhancement of safety, on the one hand, on the other, economic realities, a phase-in approach is recommended with respect to the implementation of the fundamental principles set forth in this document. In this way, proper planning and budgeting can be effectuated.

The fundamental principles are categorized in two groups:

Group 1 This group consists of those activities which should be completed within one year.

Group 2 This group consists of those activities which require proper planning and financial budgeting and which would require more than one year to complete.

It should be noted that new facilities which are constructed after the publication of this document should consider immediate and complete implementation of both Group 1 and Group 2 activities.

The Midwest Agricultural Chemicals Association supports the voluntary adoption of the Fundamental Principles set forth in this document.

INSTRUCTIONS

Location is one of the most important factors in assessing the safety risk, posed by agricultural chemical warehouse. More specifically, the facility's distance from water, lakes, rivers, protected/unprotected wells, groundwater, and places at which humans live, work, or frequent is of great importance.

It is the agricultural chemical industry's goal, whenever possible, to locate storage facilities a safe distance away from water, water bodies, and places where people live, work or frequent. If that is not possible, special precautions must be taken to provide for as much safety as possible to the area affected by the facility. With respect to new facilities, serious consideration should be given to constructing such facilities at rural locations which are more likely to be a safe distance from water, lakes, rivers, unprotected wells, groundwater, and places at which humans live, work or frequent.

Self Evaluation of the Site Risk Potential

The following questions are intended to evaluate storage facilities based on location:

1. Are there more than 100 people living or working (excluding your own employees) within 1 mile of the storage facility? Yes ___ No ___
2. Are there institutions (such as hospital, schools, nursing homes, prisons, etc.) located within 1 mile of your facility that would be difficult to evacuate? Yes ___ No ___
3. Are there rivers, streams or lakes located less than 300 feet from the storage facility? Yes ___ No ___
4. Are there unprotected wells located less than 100 feet from the storage facility? Yes ___ No ___
5. Is the land under the storage facility susceptible to shallow groundwater? Is there a higher than average risk of groundwater contamination at this site due to soil type and/or water table? Simply stated, is there a greater than average risk that something from above may get to the water below? Yes No

The above questions are general in nature, and the issues raised by them should be studied in detail on a facility-by-facility basis. A "yes" answer to two or more of the above questions is indicative of a facility which may pose a safety risk because of its location. Such facility should be operated in compliance with both the fundamental principles and the **additional location requirements** which are herein set forth. Facilities with none or one "yes" answer should comply with the fundamental principles, at a minimum, and are encouraged to also comply with the **additional location requirements**.

TERMS

With respect to the Fundamental Principles which are set forth in this document, the following terms are used within the following context:

WAREHOUSE - Any facility storing and handling agricultural packaged products or mini bulk tanks in excess of 1,000 gallons or 10,000 pounds at any time over a 12-month period. It is assumed that facilities of persons who sell agricultural chemicals (such as dealers, distributors and applicators) and public warehouses would be included.

PACKAGED GOODS vs. BULK STORAGE - The goal of this document is to improve the level of safety regarding package storage facilities. It is assumed that at multi-purpose facilities, storing or mixing bulk as well as storing package, there will be compliance with all applicable rules concerning bulk storage and rinse pads; and it is also assumed that there will be compliance at such facilities with the fundamental principles which are set forth in this document.

FUNDAMENTAL PRINCIPLES and ENVIRONMENTAL PROTECTION AGENCY (EPA) RULES - This document reflects the intention of MACA to be consistent with the regulations that the EPA is formulating concerning package storage facilities. In some cases, the provisions of this document will be more stringent, and in other cases less stringent, than the rules which the EPA is in the process of promulgating.

FUNDAMENTAL PRINCIPLES

With respect to existing facilities, the completion time for each fundamental principle is designated as either Group 1 (to be completed within 1 year) or Group 2 (to be completed in more than 1 year). However, new facilities constructed after the publication date of this document should consider immediate and complete implementation of Group 1 and Group 2 fundamental principles.

CONSTRUCTION

Group 1

1 - GENERAL:

GROUND FLOOR STORAGE ONLY:

Newly constructed facilities should be single story, without basement.

1 - FLOORS:

There should be no open drains, and existing floor drains should be properly plugged and sealed.

1 - INSIDE LIGHTING:

Inside lighting should contain a minimum of 18" clearance between product and any fixture and should be adequate such that product labels can be read.

1 - FACILITY OFFICES:

Facility offices should have at least one access to the outside which is not through the chemical storage facility. There should be "No Smoking" signs posted in offices, unless the offices are located in a separate building from the chemical storage facility.

CONSTRUCTION

Group 2

2 - GENERAL:

With respect to existing facilities, there should be no chemical storage in the basement or on second story; also see General Storage Practices in this document.

NONCOMBUSTIBLE EXTERIOR:

All steel, cement, pole buildings, metal clad or other noncombustible materials are recommended for the exterior. Wood walls are not recommended and should be replaced, but if wood walls are being used, they should be completely covered with metal or other noncombustible materials.

NONCOMBUSTIBLE INSULATION:

Insulation, if used, should be noncombustible.

OUTSIDE STORAGE:

There should be no outside storage of packaged materials; however, if climatic conditions permit and if outside storage is seasonally or temporarily necessary, such outside storage should be enclosed in an area which has an impervious floor (consisting of 4" or more of containment), roof/suitable cover, and security fence.

2 - FLOORS:

Floors should be composed of concrete or steel and be structurally sound with chemical-resistant sealant on all cracks, saw joints and side wall joints.

2 - INSIDE LIGHTING:

Inside lighting should be bright natural lighting and/or electrical.

2 - VENTILATION:

Ventilation should be adequate by use of open doors, exhaust fan(s) and/or above-roof manual ventilators. The ventilation source should come from outside and should be other than that of the chemical storage area.

Additional Location Requirement:

Office walls should be separated from the warehouse by cement block, cement, or at least 5/8" sheet rock. Metal or fireproof doors should be used for separation of offices from chemical storage areas.

2 - CONTAINMENT:

The entire package chemical storage area should be internally contained with a minimum 4" of nonpermeable dike or berm or another internal nonpermeable containment system equivalent in capacity to the 4" berm. This internal containment is in addition to any required bulk chemical containment. The facility's "Emergency Action Plan" should state the capacity of the containment system.

2 - ELECTRICAL WIRING:

All exposed electrical wiring should be in conduit.

FIRE PROTECTION

Group 1

1 - GENERAL:

Fire extinguishers should be located near every exit; or, fire extinguishers should be located so that they are no more than 50' from each other. Fire extinguishers should have a 2-A rating (at a minimum, 10 lb. ABC).

1 - HEAT:

A clearance of 18" should be maintained under any overhead heaters.

1 - HAZARD PLACARDS (NFPA 704 DIAMOND TYPE):

Hazardous placards should be at all exterior doors and, if no doors, on exterior walls. There should be periodic updating and review with the Fire Department and employees.

1 - FLAMMABLE STORAGE:

Flammable products should be segregated or isolated at least 8' from nonflammable products. SEE SPECIAL NOTE ON PAGE 13.

1 - FIRE INSPECTION:

A fire inspection should be conducted annually by the Fire Department, and a written record of such inspection should be maintained.

The Fire Department should review the "Emergency Action Plan" annually.

Additional Location Requirement:

On a semi-annual basis, a fire inspection should be conducted and the Emergency Action Plan reviewed by the paid Fire Department at a minimum and by the entire membership of a volunteer fire department.

1 - FORKLIFT:

Changing forklift tanks or batteries should be performed outside or close to the exit, and not within 25 feet of flammable product storage. Spare forklift tanks should be stored outside in a secured area, and forklift tanks should be filled outside. Each forklift should have a fire extinguisher and a grounding strap.

1 - HOT WORK:

All welding, cutting, or spark producing maintenance should be completely supervised and be performed at a minimum for facility maintenance only.

FIRE PROTECTION

Group 2

2 - GENERAL:

The following should be provided for:

Audible smoke and/or heat detectors with electric power source and backup battery;

Fire alarm connected to the fire department, fire phone, or manned security system, if available; and

Heat, if used, should have ignition source outside or enclosed.

If you answered "Yes" to question one or two in the instructions, "(1. Are there more than 100 people living or working (excluding your own employees) within one mile of the chemical storage facility?" or "2. Are there institutions (such as hospitals, schools, nursing homes, prisons, etc.) located within 1 mile of your facility that would be difficult to evacuate?"...), a properly rated fire suppression system; i.e., sprinkler, foam, etc., may be required by local authorities and should be considered.

2 - HEAT:

Electrical heat may be used, or if fuel heat systems are used, combustion air should be from outside the storage facility, if possible.

All exposed, electrical wires should be enclosed in conduit.

2 - FLAMMABLE STORAGE:

Additional Location Requirement:

Segregate by noncombustible wall. **SEE SPECIAL NOTE ON PAGE 13**

2 - HOT WORK:

Repair shops should not be located inside chemical storage buildings. If unavoidable, floor-to-ceiling 4-hour-rated fire walls with appropriate fire doors at all openings should separate the chemical storage area from the shop area.

SECURITY**Group 1****1 - ACCESS CONTROL:**

Post at all entrances and mark all doors with appropriate cautionary language. SEE SPECIAL NOTE ON PAGE 13.

1 - DRUG TESTING:

Drug testing is recommended in accordance with the applicable federal, state and local requirements.

SECURITY**Group 2****2 - ALARM:**

The security alarm system should cover all doors and windows, or perimeter fencing should be installed to properly secure the facility.

Additional Location Requirement:

The security alarm system should be audible and tied into a central monitoring station, if perimeter fencing is not utilized.

2 - EXTERIOR LIGHTING:

Exterior lighting should illuminate all entryways.

Additional Location Requirement:

Exterior lighting should illuminate all entryways and all sides of building.

2 - PERIMETER FENCING and GATES:

Optional, not required.

Additional Location Requirement:

Optional/not required, but highly recommended to keep children and others away.

STORAGE and HANDLING PRACTICES

Group 1

1 - HOUSEKEEPING:

Facility and surrounding area should be neat and free of all debris.

1 - MOTOR VEHICLES/VEHICLES/EQUIPMENT:

No motor vehicle, if inside a building, should be left unattended other than forklifts. Application equipment may be parked inside if necessary, provided a dead kill switch is utilized and an equipment inspection for fuel, battery, and crop residue is conducted nightly.

1 - AISLE SPACE:

Aisle space should be adequate to facilitate emergency exit and safety equipment, as well as safe forklift operation.

1 - PRODUCT STACKING HEIGHT:

Storing should be done in accordance with manufacturer's instructions located on the pallets.

1 - DAMAGE CONTROL:

Product that is damaged and/or leaking, or likely to leak, should be contained, overpacked immediately, labeled and segregated. Overpack containers should be large enough to hold the largest container stored.

1 - COMPATIBILITY:

In the storage area, products should be segregated according to hazard class (i.e., flammables in one area or corner, poisons in another, different area or corner, etc.).

1 - FLAMMABLE AEROSOLS:

A pallet or more of a flammable aerosol should be caged.

Additional Location Requirement:

All quantities should be caged or stored in a metal storage cabinet.

1 - WHEEL CHOCKS:

Wheel Chocks should be used for all loading and unloading.

1 - FORKLIFTS:

All forklift drivers should receive training, and records of such training should be maintained. Such training should be in accordance with applicable federal, state, and local laws and regulations. SEE SPECIAL NOTE ON PAGE 13.

1 - INSIDE EMPTY PALLET STORAGE:

Empty pallet storage (inside) should not exceed stacks 6' high, should be in rows which are no longer than 16' (approximately 48 pallets), and be separated by 4' (minimum) aisles.

1 - OUTSIDE EMPTY PALLET STORAGE:

Empty pallet storage (outside) should be located at a distance of at least 50' from the pesticide storage facility.

STORAGE and HANDLING PRACTICES**Group 2****2 - PRODUCT SEGREGATION:**

Pesticides should not be stored in the same area as foodstuffs, feedstuffs, and animal health products. Pesticides should be either stored at a distance of at least 25' from such items, or be separated by walls from the nonpesticide storage.

2 - FORKLIFTS:

All forklifts should be equipped with safety loading and unloading lights and horn. SEE SPECIAL NOTE ON PAGE 13.

EMERGENCY ACTION PLAN*

Group 1

1 - EMERGENCY ACTION PLAN:

The plan should be in writing and should contain adequate response measures to be taken in the event of product spills and other emergencies, including medical emergencies. The plan should be reviewed annually with those persons and agencies who are likely to be contacted initially to assist in the response to such developments.

1 - TRAINING PROGRAM:

A formal and documented emergency training program should be established which addresses evacuations, alarms, notifications, response actions, and types of potential emergencies.

1 - FIRE FIGHTING STRATEGY:

A predetermined fire fighting strategy should be set in place for different scenarios in the unlikely event of a fire. The fire-fighting strategy should be a part of the "Emergency Action Plan."

Additional Location Requirement:

Flammable liquid storage should be in an area accessible to fire fighters.

1- NONFIRE PERSONAL PROTECTIVE EQUIPMENT:

Two (2) or more sets of protective equipment such as safety glasses, hard hats, safety shoes, respirators, body coverings (gloves, hoods, boots) should be available and readily accessible. The training program should be documented, and all appropriate personnel should be properly trained and fitted with respirators. The training program should include annual practice drills.

ADMINISTRATION

Special Note: Facility personnel must comply with all applicable federal, state and local laws and regulations, including but not limited to those promulgated by the Environmental Protection Agency, the federal and state Departments of Transportation (DOT), and the Occupational Safety and Health Administration (OSHA).

* The "Emergency Action Plan" contained and referred to in this document includes, but is not limited to, a pre-fire plan and is not necessarily the same as that required by applicable laws and regulations. The Emergency Action Plan contained in this document is in addition to that which may be required by any such applicable laws and regulations.

FUNDAMENTAL PRINCIPLES REFERENCE CHART

GROUP 1 - This group consists of those activities which should be completed within 1 year.

GROUP 2 - This group consists of those activities which require proper planning and financial budgeting and which would require more than one year to complete.

* Denotes additional location requirement

CONSTRUCTION:		Group 1	Group 2
Page			
5	Ground floor storage only -- new facilities	✓	
6	No storage in basement or second floor -- existing facility		✓
6	Noncombustible exterior		✓
6	Noncombustible insulation		✓
6	No outside storage		✓
6	Impervious floors		✓
5	No open drains	✓	
6	Inside lighting -- bright natural or electrical		✓
5	Inside lighting -- with minimum of 18" clearance between product and fixture	✓	
6	Ventilation		✓
5	Facility offices -- one access to outside not through facility	✓	
6	Facility offices -- separate ventilation source		✓
5	Facility offices -- no smoking	✓	
7	* Interior office walls -- separated by 5/8" (minimum) cement block, etc., from warehouse with fireproof doors from chemical storage areas		✓

7	Containment -- 4" (minimum) nonpermeable dike or berm separate from bulk containment		✓
7	Electrical wiring -- in conduit		✓
FIRE PROTECTION:		Group 1	Group 2
Page			
9	Audible smoke and heat detector		✓
8	Fire extinguishers	✓	
9	Fire alarm hooked up to Fire Department		✓
9	Heat with outside ignition source, enclosed		✓
9	Heat -- combustion from outside		✓
8	Heat -- 18" clearance under overhead heaters	✓	
9	Heat -- exposed, electrical wires in conduit		✓
8	Hazard placards	✓	
8	Flammable storage -- segregated at least 8' from nonflammable products	✓	
9	* Flammable storage -- segregated by noncombustible wall		✓
8	Fire inspection -- annually by Fire Department	✓	
8	Fire inspection -- Emergency Action Plan annual Fire Department review	✓	
8	* Fire inspection -- semi-annually; fire inspection and Emergency Action Plan review	✓	
8	Forklift -- changing tanks or batteries outside or close to exit and not within 25' of flammable storage; storing and filling of tanks outside, equipment with fire extinguisher and grounding strap	✓	
8	Hot work -- welding, etc., supervised completely and for facility maintenance only	✓	
9	Hot work -- repair shops located outside, or if unavoidable, separated with floor-to-ceiling 4-hour-rated fire walls and doors		✓

SECURITY:		Group 1	Group 2
Page			
10	Security alarm system -- covering all doors and windows or perimeter fencing security facility		✓
10	* Security alarm system -- audible and tied to central monitory station		✓
10	Exterior lighting -- illuminating all entryways		✓
10	* Exterior lighting -- illuminating all entryways and all sides of building		✓
10	* Perimeter fencing and gates		✓
10	Access control	✓	
10	Drug testing	✓	

STORAGE and HANDLING PRACTICES		Group 1	Group 2
Page			
11	Housekeeping	✓	
11	Motor vehicles -- unattended or left overnight	✓	
11	Aisle space	✓	
11	Pile stacking height	✓	
12	Product segregation		✓
11	Damage control	✓	
11	Compatibility	✓	
12	Flammable aerosols -- pallet or more caged	✓	
12	* Flammable aerosols -- all quantities caged or stored in metal storage	✓	
12	Wheel chocks	✓	
12	Forklifts	✓	
12	Forklifts -- equipped with safety loading and unloading lights and horn		✓
12	Empty pallet storage	✓	
EMERGENCY ACTION PLAN		Group 1	Group 2
Page			
13	Emergency Action Plan	✓	



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