



Atrazine PC#80803
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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May 19, 1992

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Ciba-Geigy proposed waiver of 50-ft. set-back for atrazine mixing/loading/storage sites (DP Barcodes D174673, D174677, and D174680)

FROM: Dennis F. Howard, Biologist *Dennis F. Howard*
Pesticide Management and Disposal Staff

THROUGH: Paul F. Schuda, Deputy Director *Paul F. Schuda*
Environmental Fate and Effects Division

TO: Ann Sibold, Review Manager
Special Review Branch
Special Review and Reregistration Division

The purpose of this memorandum is to provide comments on Ciba-Geigy's proposal to amend well set-back restrictions to allow permanent mix/load/storage facilities, meeting the registrant's criteria, to operate within 50 ft. of wells, etc. This review is in response to requests from SRRD in DP Barcodes D174673, D174677, and D174680.

I. Introduction.

On February 20, 1992, Robert Denny of the Pesticide Management and Disposal Staff (PMDS) was assigned the three data packages referenced above with instructions to "review Registrant's request to amend well set-back restriction to allow permanent mix/load/storage facilities, meeting the registrant's criteria, to operate within 50 ft. of wells, sinkholes, etc." Since Mr. Denny resigned his position with the Agency on April 17, 1992, Kevin Officer and I have been assigned the responsibility of representing PMDS on the triazine team.

Subsequent to receipt of the three referenced data packages, PMDS received various triazine team documents that indicate that negotiations between EPA and Ciba-Geigy have resulted in alterations of the requested label amendments. It is PMDS's understanding that label passages currently under consideration regarding setbacks for mixing, loading, and storage are as follows:

"This product may not be mixed or loaded within 50 feet of

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"This product may not be mixed or loaded within 50 feet of intermittent streams, rivers, reservoirs, impounded or natural lakes, or within 50 feet of all wells, including abandoned wells, drainage wells, and sink holes."

-and-

"Ground water contamination may be reduced by diking and flooring of permanent liquid bulk storage sites with an impermeable material."

However, PMDS understands from conversations with SRRD that the Agency remains interested in reviewing the adequacy of the Registrant's proposed specifications for "adequate environmental safeguards." These specifications are contained (attached) in the Registrant's "1992 Guide to Handling Ciba-Geigy Bulk Liquid Pesticides". Kathy Pearce (SRRD) indicated that the specifications may be considered for labels on atrazine end use products and/or may be considered during a triazine special review.

II. Issues.

PMDS would like to approach this review by addressing two different issues:

- Scope- For which types of activities (mixing, loading, storage) and which types of water resources should a 50-ft. set-back, and waiver therefrom, apply?
- Safeguard specifications- Are the specifications for environmental safeguards proposed by Ciba-Geigy adequate to allow a waiver of the 50-ft. set-back?

A. Scope.

1. Operations covered. PMDS interprets Ciba-Geigy's 1/2/92 letter to EPA (attached) as requesting, in part, a label change to provide for a set-back waiver which could apply to permanent facilities where atrazine is stored/mixed/loaded within 50 feet of a well. As noted in the introduction section above, subsequent negotiated label changes have produced draft label language in which the set-back applies specifically to mixing and loading, and no waiver mechanism is included for mixing and loading within the set-back. Permanent liquid bulk storage would apparently be allowed inside the set-back with the recommendation (but not requirement) that impermeable diking and flooring be installed.

PMDS suggests that the current draft label language may need revision regarding scope. Our reasoning is that we do not believe that this language will effectively alleviate the Registrant's concern (stated in their letter of 1/2/92) that pesticide dealers who handle bulk atrazine containers in permanent containment

structures could be cited for mixing and loading within the 50-ft. set-back. Such bulk facilities not only store, but also routinely mix and load atrazine, and it is likely that the mix/load area of many facilities will be located within 50 feet of a well. Thus, such dealerships could still be interpreted to be violating the label prohibitions against mixing/loading within the set-back zone. PMDS believes that this situation can be remedied by a label statement that prohibits mixing and loading within the set-back area, but allows waivers provided certain safeguards are in place (this follows the theme of the Registrant's original proposal).

In the latest draft label, a storage statement suggests containment provisions for permanent liquid bulk storage sites, thus implying that bulk storage inside a set-back area is permissible. PMDS believes that bulk storage of atrazine should be prohibited inside the 50-ft. set-back, unless waived when specific environmental safeguards are in place. Stringent containment standards are warranted because failures of bulk containers and their plumbing can result in catastrophic releases of pesticide, contaminating ground water and surface water. Although storage of smaller containers of atrazine should also be safeguarded (especially inside set-back areas) PMDS believes that until the Agency has thoroughly reviewed this matter, the label should recommend that storage areas for smaller containers be protected by flooring and diking with an impermeable material.

2. Water resources protected. The latest draft would apply the mixing/loading set-back to both surface water and wells, whereas the Registrant's original proposal only pertained to wells. PMDS concurs with the strategy in the latest draft label of protecting both wells and surface water with 50-ft. set-backs. However, if set-back waivers are to be granted, we suggest that for the time being, they be limited to waivers of well set-backs and not of surface water set-backs. Our reasoning for excluding waivers for surface water set-backs is as follows:

- In PMDS's view, environmental safeguards should be two-fold. They should include: a) containment of the area where atrazine is mixed/loaded and stored in bulk, and b) direct protection of the water resource (e.g. properly cased and capped well, anti-siphon devices, dikes for surface water)
- The Registrant's "1992 Guide to Handling Ciba-Geigy Bulk Liquid Pesticides" includes provisions for containment of bulk containers and mixing/loading areas and requirements for well protection, but does not include requirements to protect surface water, *per se*. For example, there are no requirements to dike surface water bodies or to prevent back-flow into surface water bodies.

If the Registrant wishes to propose standards for direct protection

of surface water bodies, PMDS would be willing to reconsider this issue.

B. Safeguard specifications.

1. Preliminary comments. Some states are developing or have implemented regulations for containment of bulk pesticides and mixing and loading areas at permanent commercial sites (roughly half of the states have some form of specific containment requirements, but these vary considerably in stringency). EPA is in the process of developing federal regulations for bulk pesticide containment. As currently conceived, the federal regulations would apply to commercial agrichemical businesses (e.g. commercial applicators with bulk tanks, dealers who refill refillable containers) and would consist of structural and operational standards for pesticide spill prevention and control during bulk storage and dispensing operations. When implemented, these measures should alleviate some concerns about pesticide releases to surface water and ground water. Since the federal requirements are still in development, PMDS has reviewed the Registrant's, "1992 Guide to Handling Ciba-Geigy Bulk Liquid Pesticides" (hereafter referred to as "the Guide") to determine whether these standards could constitute interim "appropriate environmental safeguards" for waivers from set-backs.

It is PMDS's understanding that pesticide dealerships that refill refillable atrazine containers for distribution and sale (i.e., "EPA Producing Establishments") are required by the Registrant to satisfy the standards in the Guide. The dealerships would also be required to comply with state and local standards for containment, where applicable. It is also our understanding that the Registrant does not currently specify that these standards must be met by end users such as farmers, who may also mix/load the product or store it in bulk containers.

PMDS concludes, with certain reservations, that the requirements in the Guide would generally be adequate interim measures to protect water resources inside 50-ft. set-backs. Our reservations are highlighted below, with recommendations that appropriate changes be made before the requirements in the Guide be considered to be "appropriate environmental safeguards." In addition to the specific recommendations listed below, PMDS recommends that it be made clear that required safeguards for set-back waivers should apply not only to EPA producing establishments but to any facility storing bulk quantities of product or mixing and loading product (e.g. farms, for-hire applicators, etc.).

2. Construction - impermeability (p. II-4). The Guide should require that containment structures be built or sealed/coated with materials that meet a hydraulic conductivity standard of 10^{-7} cm/sec or less. Such materials should be specified to be resistant to the

pesticide being stored or handled.

3. General requirements - sight gauges (p. II-4). The Guide should clarify that deadman valves for sight gauges on existing bulk tanks must remain closed except when manually opened. Without this specification, deadman valves (valves that automatically return to the closed position when released) could be clamped or otherwise affixed in the open position, circumventing the intent to prevent major releases from broken sight gauges.

4. General requirements - setbacks (p. II-4). Requirements for mixing and loading setbacks from wells (unless with proper protection) should be extended to apply to storage of bulk containers of product (unless with proper protection).

6. Details, dikes, general (p. II-12). The minimum dike capacity for structures lacking protection from precipitation should be sufficient to contain a minimum of 125% (rather than 110%) of the contents of the largest tank...

7. Details, dikes, operational pads (p. II-13). The minimum pad capacity should be the volume of the largest container used on the pad, up to a volume of 1000 gallons.

III. Recommended Label Language

In conclusion, PMDS recommends that the following alternative label language be considered:

"This product may not be stored in bulk containers or mixed/loaded within 50 feet of intermittent streams and rivers, reservoirs, impounded or natural lakes and sink holes."

"This product may not be stored in bulk containers or mixed/loaded within 50 feet of all wells, including abandoned wells and drainage wells, unless appropriate environmental safeguards are present to prevent groundwater contamination."

"For permanent storage sites of non-bulk containers of this product, ground water contamination may be reduced by diking and flooring with an impermeable material."

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cc: Janice Jensen, PMDS
Kathy Pearce, SRRD
Jackie McQueen, SRRD

1991 - 1992 CIBA-GEIGY BULK REQUEST/SITE INSPECTION

Dealer's Billing Location - Name & Address _____

STORAGE LOCATION _____

TANK # 1

MARKETING REP: <u>2</u> CITY/STATE _____ P.O. # _____	CARRIER-CALL <u>3</u> (LOCATION CONTACT) AT _____ (Phone Number) (24 HOURS PRIOR TO DELIVERY) REMARKS <u>4</u>
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FOR HOME OFFICE USE: PMT CODE _____ PROGRAM _____ SHIP FROM _____ SHIP DATE _____	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Prod. I.D.</th> <th>PRODUCT</th> <th>1991 SALES</th> <th>C-G OWNED* INVENTORY</th> <th>QUANTITY TO BE SHIPPED</th> </tr> </thead> <tbody> <tr> <td>78965</td> <td>AATrac® Al Bulk</td> <td></td> <td><u>5</u></td> <td><u>6</u></td> </tr> <tr> <td></td> <td>Ricco® Al Bulk</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5A7AC</td> <td>Cycle® Bulk</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Duro® Bulk</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> * Dealer must need to confirm quantity owned by CIBA-GEIGY. <u>7</u> Storage location owned _____ leased _____. If leased, lease must be attached before request will be processed. <u>8</u> Dealer will refill Farm-Pak® Units, Field-Pak™ Units or Mini-Bulk. Yes ____ No ____	Prod. I.D.	PRODUCT	1991 SALES	C-G OWNED* INVENTORY	QUANTITY TO BE SHIPPED	78965	AATrac® Al Bulk		<u>5</u>	<u>6</u>		Ricco® Al Bulk				5A7AC	Cycle® Bulk					Duro® Bulk			
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	Duro® Bulk																									

☐ UCC-1 on File Attached _____
 Bulk Checklist Tank size _____
☐ Tank made of _____
☐ Tank brand name _____
☐ Tank is Cone _____ Flat _____ Dished _____

Minimum site requirements: Any applicable standards must be met. Dealer EPA Est. # 12

- 13
1. Tank is equipped with a male camlock fitting, for filling, and can be reached from the ground. (No top lid)
 2. Tank is free of stress cracks, punctures and other signs of aging or structural defects.
 3. Tank capacity allows required 5% headspace.
 4. Tank outlet has a stainless steel locking ball valve.
 5. Tank is vented to prevent entry of water, dirt, and other contaminants.
 6. Tank is empty, clean, and dry. Note: If not, then tank contains same product to be stored, all of which is owned by CIBA-GEIGY and sample has been submitted. Date Submitted _____
 7. Inventory is in Field-Pak Units and/or Farm-Pak Units.
 8. All tank seals, plugs, reducers, plumbing, hoses, and related fittings meet CIBA-GEIGY structural and compatibility requirements. (No PVC)
 9. Exterior sight gauge is equipped with a deadman valve. (Use N/A if no sight gauge is present.)
 10. Product can be recirculated. (Flowables only) If Cycle, tank is equipped with an eductor. All other flowables must have a mixing system for complete mixing.
 11. The site has an emergency plan displayed for spills and fires.
 12. Tank is diked and any outlet, if present, is permanently plugged with concrete or welded.
Type of dike: Concrete _____ Steel _____ Block _____
 13. Tank plumbed separate from other herbicides, fertilizer or water.
 14. Tank's profile is kept within dike walls.
 15. If poly tank, it is less than six years old (use N/A if not poly).
 16. Any cracks or seams in dike are sealed with an approved sealant.
- Items 1-16 above must be checked "yes" before shipment is requested.

14 Other Important Safety Measures

17. Equipment is present to handle a minor spill and its cleanup. Equipment includes protective clothing, rubber boots, respirator, goggles, rubber gloves, and absorbent material.
18. A security system is in effect at the site (fence, alarm).
19. Tank opening used for inspection only and not for human entry.
20. Does bulk site have a fire system? (Must be "yes" if state requires.)
21. Package warehouse is diked or will contain liquids resulting from spill or fire.
22. Roof over dike.
23. Building around entire bulk facility.
24. Site has CIBA-GEIGY safety placards.
25. Site has CIBA-GEIGY groundwater placards.
26. Tank has product sampling port.

I HAVE INSPECTED THIS SITE, AND IT IS READY TO RECEIVE DELIVERY OF PRODUCT AND HAS COMPLIED WITH ALL STATE AND/OR LOCAL REQUIREMENTS

Signature _____ Storage Location _____

15 Signature _____ CIBA-GEIGY REP

☐ BASIC INSURANCE

☐ INSURANCE PLUS

CGA 930-00862-8 9/91

CIBA-GEIGY BULK SITE STORAGE STANDARDS

I. PRIMARY REQUIREMENTS

These standards and all applicable state regulations must be met before CIBA-GEIGY will store bulk product.

A. Tanks

*Construction:

All tanks must be made of one of the following materials:

- (1) Stainless steel.
- (2) Glass or epoxy lined steel.
- (3) Polyolefin or high density polyethylene.

Mild steel will be accepted but not recommended.

*All tanks must meet the following requirements:

- (1) Capacity allows 5% headspace.
- (2) Outlet has locking stainless steel ball valve.
- (3) Tank is equipped with a conservation vent to prevent entry of water, dirt, or other contaminants.
- (4) **TANKS MUST BE EQUIPPED WITH A CAMLOCK TYPE FITTING (FOR FILLING) THAT CAN REACHED FROM GROUND LEVEL.**
- (5) Lids on the top of the tank must be secure and threaded (or otherwise properly sealed) to prevent water contamination.
- (6) Tanks must be properly labeled as to product, net contents and EPA registration number as required by law.
- (7) **NEWLY PURCHASED POLY TANKS MUST BE CONE BOTTOM.**
NEWLY PURCHASED STAINLESS STEEL OR GLASS-LINED STEEL TANKS MUST BE DISH OR CONE BOTTOM.
- (8) **ALL CYCLE TANKS MUST BE EQUIPPED WITH EDUCATORS TO ENSURE COMPLETE RECIRCULATION AND PROPER MIXING OF PRODUCT.**

*Age of Tanks:

- (1) All poly tanks must be less than six years old if stored outside a building.
- (2) All tanks must be free of stress cracks, weakened welds, punctures, rusting or other signs of aging or structural defects.

B. Dikes

All tanks storing CIBA-GEIGY products must be diked. The following are required standards for dikes encircling storage tanks containing CIBA-GEIGY product.

***Construction:**

All dikes must be made of one of the following materials:

- (1) Concrete
- (2) Concrete block (filled, capped, and rebar required).
- (3) Steel

***The following materials do not meet CIBA-GEIGY standards.**

- (1) Poly
- (2) Hypalon
- (3) Stock tanks substituting as a dike
- (4) Wooden
- (5) Earthen

***The following maintenance must be performed.**

- (1) Any dike outlet, if present must be permanently sealed by plugging with concrete or welding.
- (2) Any cracks, holes or other outlets must be repaired, sealed and permanently plugged or otherwise impermeable.
- (3) Where the sides and floor of the dike are poured separately, sealing of the cracks and corners with a nonshrinking epoxy sealing material is required.
- (4) The dike must completely encircle the tank; tanks which overhang or extend over the dike are not acceptable. Check your local/state regulations for additional requirements.

C. General Requirements

- (1) Tank must have separate plumbing, pump and meter from other pesticides, fertilizer or water.
- (2) Safety equipment such as back siphoning valve or air break must be in place to ensure product and water source integrity.
- (3) The suction side of the pump and all plumbing is enclosed by the dike or otherwise captured on an operational pad.
- (4) Flowables must be mixed by recirculation per CIBA-GEIGY guidelines.
- (5) Site has a contingency plan (emergency contact source) for emergencies, spills, and fires.
- (6) Sight gauges are not allowed for any newly purchased tanks. For established tanks, any exterior sight gauge must be equipped with a deadman valve.
- (7) All tank seals, plugs, reducers, plumbing, and related fittings must meet CIBA-GEIGY structural and compatibility requirements.
- (8) PVC is not acceptable in any form, i.e., Fittings/Plumbing/Hosing.
- (9) **NO MIXING OR LOADING SHOULD TAKE PLACE WITHIN 50' OR WITHIN GUIDELINES ESTABLISHED BY STATES**

AND/OR FEDERAL REGULATORS, OF A WELL SITE, UNLESS THERE IS PROPER WELL PROTECTION. PROPER WELL PROTECTION INCLUDES:

- (A) WELL IS EQUIPPED WITH ANTI BACK SIPHONING OR AIR BREAK DEVICES

- AND -

- (B) WELL HEAD IS PROPERLY ENCLOSED, SEALED OR CAPPED.

- AND -

- (C) OPERATIONAL PADS ARE IN PLACE THAT MEET CIBA-GEIGY STANDARDS.

*During the period of product storage, the bulk tanks, dikes, and operation pads must be inspected for cracks, leaks and other signs of deterioration or spill sources, appropriate maintenance should be completed as required on any substandard equipment or structures.

II. RECOMMENDED SITE STANDARDS

Unless required by state regulations, the following are recommended site improvements but are not required to store CIBA-GEIGY bulk pesticides. However, these recommendations must be kept in mind when soliciting new business or providing assistance to dealers in planning new construction. We will require that these standards be met in the future.

- A. Dikes should be coated with a flexible epoxy material to protect and preserve the cement.
- B. The operational system should be in place for delivery, mixing, and loading.
- C. Protective equipment to handle a minor spill and its cleanup is present and available. This includes protective clothing, boots, respirator, goggles, impervious gloves, and absorbent material.
- D. A security system should be in effect at the site. This may include a fence around the immediate bulk storage location (minimum of 6' above the ground level), alarms, or a locked building.
- E. The bulk storage facility is enclosed in a building or under a roof to manage precipitation and other uncontaminated water.
- F. CIBA-GEIGY safety procedures and groundwater protection signs are apparent at the mixing and loading site.
- G. Mini-bulk repackaging or refilling must be conducted within the dike or containment area or on an approved operational pad.
- H. ALL FLOWABLE TANKS SHOULD BE EQUIPPED WITH EDUCATORS TO ENSURE COMPLETE RECIRCULATION AND PROPER MIXING OF PRODUCT.

III. FUTURE REQUIREMENTS FOR STORING CIBA-GEIGY BULK OR PACKAGE PRODUCTS

- A. SAMPLING PORTS MUST BE IN PLACE IN 1992 FOR THE 1993 BULK SALES YEAR.

- B. Operational pads will be required at all bulk storage locations in 1993 for the 1994 bulk sales year.
- C. Mini-bulk containing product must be stored in a diked or contained area by 1993 for the 1994 bulk sales year.
- D. Any mixing, loading or refilling of refillable packages must be conducted on an approved operational pad. (1993 for the 1994 bulk sales year.)
- E. Mixing, loading or refilling of any product, including packaged product, must be conducted on an approved operational pad or within approved secondary containment (by 1995).

DIKES - OPERATIONAL PADS

DETAILS

A. Dikes

1. General

CIBA-GEIGY will only store bulk herbicides in facilities which are equipped with a concrete, concrete (cinder) block, or steel dike. CIBA-GEIGY will not approve storage of bulk herbicides in any facility which is undiked or has earthen, gravel, or poly dikes.

The dike may not contain any outlets. If a relief valve or outlet is present, it must be permanently closed, plugged or sealed with concrete or steel. This restriction is designed to prevent the accidental loss of product from an open valve or outlet which renders the dike useless. A sump pump with a locked switch, not automatic, is recommended for the removal of water which may accumulate due to rain or snow.

The dike may not be used to collect or hold rinsate water. A separate holding or collection tank should be used for rinsate water. The collection tanks should be in the diked area. The dike should be above the surrounding topography at the site to permit the inspection of the integrity of the dike. The ground around the dike should be graded to carry surface water away from the dike. Unless stricter state standards apply, the dike must have sufficient capacity to contain a minimum of 110% of the contents of the largest tank plus the displaced volume of the butts of the tanks contained within the dike ($\text{Ft.}^3 \times 7.48 = \text{gallons}$).

The specifications listed below must be followed to meet the CIBA-GEIGY standards for bulk sites.

2. Concrete Dikes

CIBA-GEIGY requires the use of concrete rated at a minimum of 4,000 psi for poured dikes with re-bar placed on no greater than 1 ft. centers. Walls and the dike floor must be a minimum of 8 in. thick. The dike floor should slope slightly to one point to permit collection of water by a sump pump.

The walls and floor of the dike should be poured together. If the walls and floor of the dike are poured separately, a flexible epoxy chemical resistant caulking compound should be used to seal the seam.

3. Construction of Concrete Block or Cinder Block Dikes

CIBA-GEIGY recommends that the floor be poured first. Construct the dike by laying concrete blocks on top of the floor with rebar re-inforcement from the floor to the block wall. Rebar should be placed no greater than 1 ft. on center.

For concrete block dikes constructed outdoors, CIBA-GEIGY requires that the walls be filled and capped to prevent winter water damage to the walls. Interior dike walls must be capped as well to make the facility easier to maintain and keep clean. If a crack should develop, use an epoxy caulking compound to repair the dike.

4. Steel Dikes

Steel dikes must be constructed with a minimum of 1/4 in. steel welded to prevent leaks at all seams. Beams should be welded to the floor under the containment dike to allow visual monitoring and inspection of the dike. The dike should be installed on a crushed gravel or concrete base.

Livestock tanks and old fertilizer tanks do not qualify as steel dikes for the storage of CIBA-GEIGY products.

All seams should be double welded: that is, welded on the top and bottom of the seam.

The sides of the dike should be braced from the inside with welded angle-iron braces.

Seams on the floor of the dike should be supported from below by welded I-beams. Also, the leg of each tank should be supported from below by a welded I-beam.

A steel pad of sufficient size to hold each tank leg should be welded on the inside floor of the dike. A plywood "shock absorber" should be placed over each steel pad.

After construction is completed, the dike should be painted with a chemical-resistant paint to reduce rusting.

Each dike should be tested for leaks by filling with water. Look for leaks within 24 hours. If leaks appear, reweld the appropriate seams.

5. Poly Dikes

Poly dikes are not allowed for diking at facilities storing CIBA-GEIGY bulk herbicides.

6. Dike Maintenance

Dikes should be periodically inspected for normal cracks which can develop through weathering. Any cracks, seams, or joints in the dike should be repaired or sealed with nonshrinking epoxy repair putty.

B. Operational Pads

1. The Operational Pad must be a permanent structure made of reinforced concrete which adjoins the dike facility.
2. The pad should have inwardly sloped sides and be designed to contain a minimum of 250 gallons of liquid or the largest tank refilled on the pad area unless state requirements specify otherwise. A sump may be used to meet this requirement.
3. The sump or catch basin may be drained by a locking manually controlled pump only. Valves or drains on the operational pad are not allowed.
4. No chemicals may be stored on the operational pad area.

Suggestions:

1. The Operational Pad should be the length of the largest application vehicle serviced plus two revolutions of one wheel of this vehicle. This will minimize the amount of dirt and gravel entering the collection system.
2. Constructing a roof over the Operational Pad is recommended.
3. The slope should range from 2 - 3 1/2%.
4. Rough finish concrete for a non slip surface.
5. This is not a dump site for leftover loads; it should be used for controlling accidental spills or releases from application or nurse equipment.
6. An above ground holding tank system inside a dike must be in place to recycle waste water.
7. CIBA-GEIGY requires that the operational system be constructed of concrete at a minimum of 8 in. thick with rebar placed on 1 ft. centers. The concrete should be rated at 4000 PSI.

C. Security

Security measures include fencing or enclosing the bulk storage area in a secured building. Fences are required to be at least 6 ft. tall (measured from ground level) around the dike area and all gates must be locked when the facility is not in use. A secured building may be constructed around the bulk facility so that doors can be locked when not in use. The added benefit of a roofed site or facility enclosed in a building is the advantage of managing precipitation and rinsate waters.

D. Calculations For A Concrete Dike/Operational Pad

Concrete is measured and sold by cubic yard (27 cubic feet). To calculate the amount of concrete required for dike, figure the volume of the forms in cubic feet (thickness times width times length) and divide by 27 to obtain the total number of cubic yards.

For example, to pour a 4" thick concrete pad which is 20 ft. wide and 40 ft. long, calculate the cubic footage by multiplying the thickness, 4" (or 1/3 of a foot) times 20' (width) times 40' (length). This multiplies out to 266 2/3 or 267 cubic feet. Converting this to cubic yards, 267/27 or 10 cubic yards of concrete to complete the driveway.

The chart below can be used in estimating amounts of concrete. For the 4" X 20" X 40' concrete pad, read down the left column of the table to the depth of the concrete in inches, which is 4". Reading across you will find that one cubic yard at that depth will fill 81 sq. ft. The area of the pad is 800 sq. ft. (length X width). Next divide the total square feet by the number of square feet covered by one cubic yard of cement:

$$800/81 = 9.88$$

This you can see is roughly 10 cubic yards of concrete that will be needed for the pad.

Calculation

This table indicates the area in square feet that one cubic yard of concrete will fill for a variety of thickness. For example, one cubic yard of concrete will fill a form area of 54 square feet for an area that is 6" thick.

Concrete Estimating

1 Cubic Yard of Concrete Will Fill

<u>Thickness</u> <u>Inches</u>	<u>Sq. Ft.</u>	<u>Thickness</u> <u>Inches</u>	<u>Sq. Ft.</u>	<u>Thickness</u> <u>Inches</u>	<u>Sq. Ft.</u>
1	324	5	65	9	36
1 1/2	216	5 1/2	59	9 1/2	34
2	162	6	54	10	32.5
2 1/2	130	6 1/2	50	10 1/2	31
3	108	7	46	11	29.5
3 1/2	93	7 1/2	43	11 1/2	28
4	81	8	40	12	27
4 1/2	72	8 1/2	38		

Labor

Labor is estimated to be 2-2.3 man hours per cubic yard of concrete. Therefore, to construct the pad 20" X 40' X 4" thick, it would take 20 man hours for construction of forms and pouring cement.

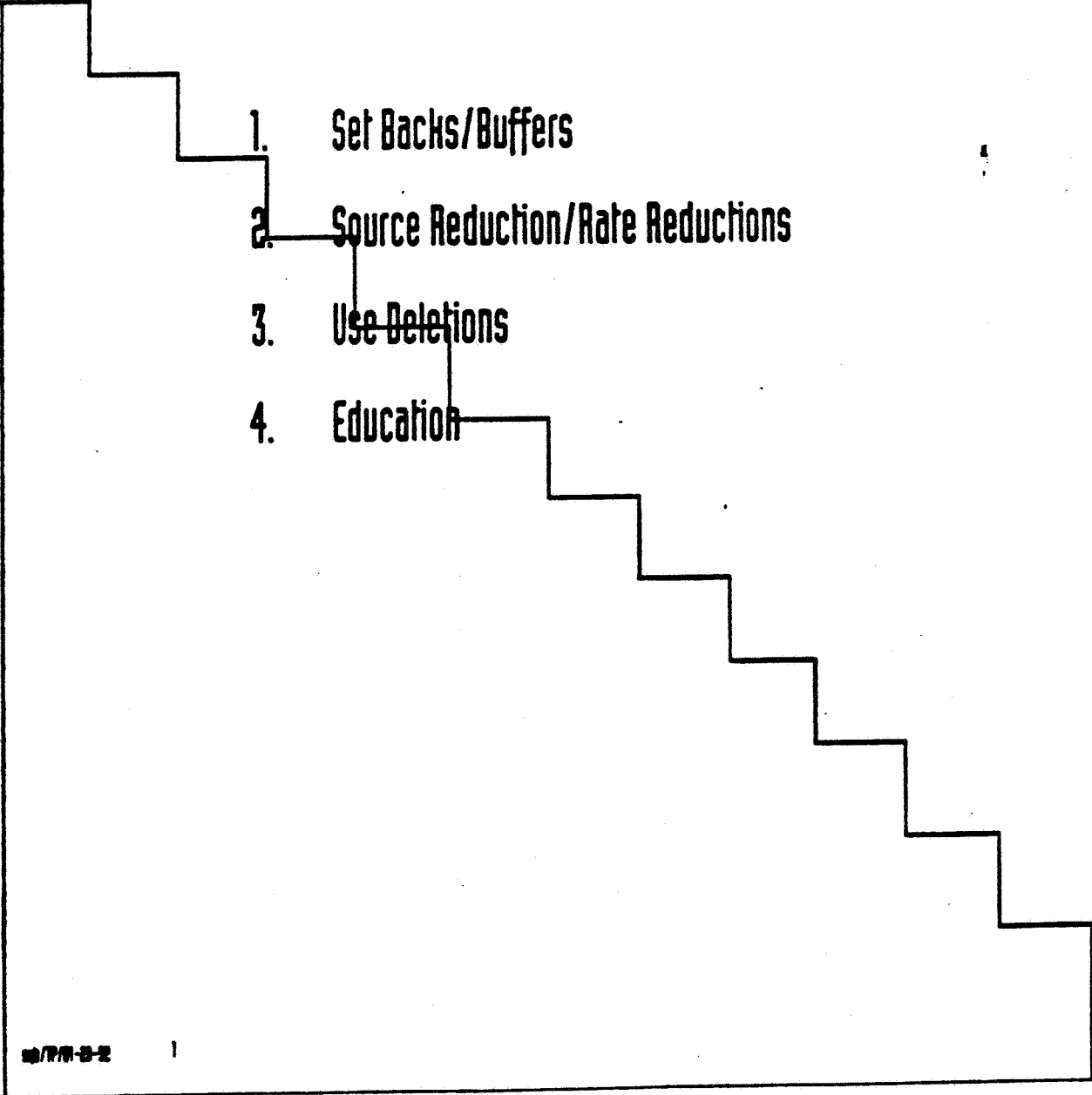
Materials Estimate

Cost of Concrete Per Cubic Yard (4,000 lbs./yd.³)

- 1 - 3 cu. yds. = \$50 - \$60
- 3 - 10 cu. yds. = \$45 - \$55
- 10 - 20 cu. yds. = \$42 - \$50

NOTE: Type II and Type IIA concrete prices vary from region to region. These figures are estimates only.

Summary of Proposals for Atrazine

- 
1. Set Backs/Buffers
 2. Source Reduction/Rate Reductions
 3. Use Deletions
 4. Education

Atrazine Storage Safeguard Chronology

2/20/92 R Denny receives Bean Sheet # 174677 package dtd 2/19/92 referring to instructions in Data Package 174673. #174677 package contains draft booklet label for 10 and 25 pounds (granules) and sample label, which includes following salient language:

Storage and disposal (p. 34)

Store in a dry place. Do not contaminate water, food, or feed by storage, disposal, or cleaning of equipment. **Wastes resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility.**

Environmental hazards (p. 35)

...This product may not be mixed/loaded, or used within 50 feet of sink holes. This product may not be mixed/loaded, or used within 50 feet of all wells, including abandoned wells, drainage wells, unless appropriate environmental safeguards are present to prevent groundwater contamination. Such measures may include curbing and flooring of mix/load/rinse pads with an impermeable material sufficient to contain spills, leaks, etc., and/or the use of appropriate well head protection measures, i.e., antisiphon device, sealed casing, etc.

2/20/92 R Denny receives Bean Sheet #174680 package dtd 2/19/92 referring to instructions in Data Package 174673. #174680 package contains:

- 1) draft booklet label for AAtrex 4L, including following salient language:

Storage and Disposal (p. 32)

Storage

Ground water contamination may be reduced by diking and flooring of permanent liquid bulk storage sites with an impermeable material.

Environmental hazards (p. 34 and p. 37)

...This product may not be mixed/loaded, or used within 50 feet of sink holes. This product may not be mixed/loaded, or used within 50 feet of all wells, including abandoned wells, drainage wells, unless appropriate environmental safeguards are present to prevent groundwater contamination. Such measures may include curbing and flooring of mix/load/rinse pads with an impermeable material sufficient to contain spills, leaks, etc., and/or the use of appropriate well head protection measures, i.e., antisiphon device, sealed casing, etc.

- 2) Ciba-Geigy bulk site storage standards, including following key language:

Minimum site requirements (p. I-4)

#12. Tank is diked and any outlet , if present is permanently plugged with concrete or welded.

#16. Any cracks or seams in dike are sealed with an approved sealant.

Other important safety measures

#21 Package warehouse is diked or will contain liquids resulting from spill or fire.

Ciba-Geigy Bulk Site Storage Standards

Primary requirements (P. II-4)

[• Concrete construction (reinforced concrete not specified here, but is later on p. II-12), except for concrete block.]

[• Impermeability is required for crack/hole filling, but not defined or required for other areas of the containment structure.]

• No mixing or loading should take place within 50" or within guidelines established by states and/or federal regulators, of a well site, unless there is proper well protection. Proper well protection includes:

(A) Well is equipped with anti back siphoning or air break devices and

(B) Well head is properly enclosed, sealed or capped and

(C) Operational pads are in place that meet Ciba-Geigy standards.[However, recommended site standards later include that the operational system should be in place for delivery, mixing and loading, suggesting that operational pads may not be required. Perhaps this only applies in situations where wells are not present within the aforementioned setback?]

Operational pads (p. II-13)

#1. The operational pad must be a permanent structure made of reinforced concrete which adjoins dike facility.

2/20/92 R Denny receives Bean Sheet #174673 package dtd 2/19/92 with instructions to review Registrants request to amend well setback restriction to allow permanent mix/load/storage facilities meeting the registrants criteria, to operate within 50' of wells, sinkholes, etc. The package includes:

1) C-G letter to EPA dated 1/2/92 requesting change in well set-back restriction and stating that several states had pointed out that facilities can be cited for location w/in 50' of wells.

2) Aatrex 80W draft label for 5 and 25 pounds and sample label, which includes following language:

Pesticide Storage and Disposal (p. 31)

...Wastes resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility.

Environmental Hazards (p. 32)

...This product may not be mixed/loaded, or used within 50

feet of sink holes. This product may not be mixed/loaded, or used within 50 feet of all wells, including abandoned wells, drainage wells, unless appropriate environmental safeguards are present to prevent groundwater contamination. Such measures may include curbing and flooring of mix/load/rinse pads with an impermeable material sufficient to contain spills, leaks, etc., and/or the use of appropriate well head protection measures, i.e., antisiphon device, sealed casing, etc.

3) C-G letter to D. Barolo (SRRD) summarizing meeting held 2/6/92 letter of commitments regarding surface water mitigation measures, including in pertinent part:
Ciba-Geigy's 1992 Guide to Handling Bulk Liquid Pesticides:
"Requested to support our amendment request to revise language currently on our end-use labeling regarding the 50 foot set-back from any well. This revision would provide an exception to the 50 foot buffer for those liquid bulk storage/mixing/loading pads meeting the criteria noted in the above guide."

Application to revise label to add surface water mitigation measures:

The language currently on the technical atrazine label includes: **...Wastes resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility.**

[Shouldn't storage/mixing/loading setback also apply to surface water bodies? Does it?]

2/21/92 Note to triazine members re: draft response to CG atrazine proposals. Pertinent language:

Language already on the label: "This product may not be mixed/loaded or used within 50 feet of all wells including abandoned wells, drainage wells, and sinkholes."

New language added: "This product may not be applied aerially or by ground within a minimum of 33 feet of perennial or intermittent streams, lakes, ponds, or rivers, or within 200 feet around surface water used as drinking water supplies."

Additional language posed by EPA: "This product may not be mixed/loaded within 50 feet of perennial or intermittent streams, lakes, ponds, rivers, or within 50 feet around surface water classified or used as drinking water supplies."

Additional amendment to "directions for use": "If state/local requirements (for example: requirements for maximum application rates, well set-backs for mixing/loading) are more restrictive than the requirements below, state/local requirements must be followed."

Waiver of 50 feet set-back where "appropriate environmental safeguards are present." We are consulting with Superfund staff in reviewing the information you have submitted on bulk site storage standards. We will contact you when our review is completed.

3/5/92 D. Barolo letter to C-G. Requested statements:

"This product may not be stored/mixed/loaded, applied aerially or by ground within a minimum of 66 feet of perennial or intermittent streams, lakes, ponds or rivers not classified or used as drinking water supplies."

"This product may not be stored/mixed/loaded, applied aerially or by ground within a minimum of 200 feet around surface water classified or used as drinking water supplies (for example: lakes, reservoirs, etc.)"

"Where there are state/local requirements regarding atrazine, for example: Best Management Practices (including requirements for maximum application rates and/or set-backs for mixing/loading/application), these requirements must be followed. In each case where the state/local requirement is not the same as the label requirement, the more restrictive/protective must be followed."

Waiver of 50 feet well set-back where "appropriate environmental safeguards are present." We are consulting with Superfund staff in reviewing the information you have submitted on bulk site storage standards. We will contact you when our review is complete.

3/10/92 Fax to Kevin Officer from Kathy Pearce re: set-back distances. With set-backs of 66'/200' from (non-drinking water/drinking water) surface water for storage/mixing/loading, "are we asking for something that exceeds current requirements and that is not enforceable?"

3/24/92 Fax to Kevin Officer from K. Pearce requesting review/comments of C-G (3/23/92) counter proposal. C-G proposal (in part):

For mixing, loading and storage situations, we would recommend that the buffer be 50 feet for ground and surface water protection, unless appropriate environmental safeguards are present. Without this modification, many storage and mixing sites that employ sound environmental protection standards could no longer be used. Our proposal is consistent with the revisions for the ground water protection (well-head set-back) currently under review by the Agency. We have provided specification for environmental protection to the Agency and are awaiting EPA concurrence. We understand these have been forwarded to

Superfund Staff for comment...

4/3/92 D. Barolo letter to C-G:

Your proposal regarding storage/mixing/loading requirements stating that set-backs should be 50 feet for both surface and groundwater protection, is acceptable. The Agency is reviewing your request for a waiver of this 50 feet set-back where there are "appropriate environmental setbacks." The following language is currently acceptable:

This product may not be stored/mixed/loaded within 50 feet of intermittent streams and rivers, reservoirs, impounded or natural lakes, or within 50 feet of all wells, including abandoned wells, drainage wells, and sink holes.

4/6/92 Unsigned memo from OPTS, addressee unknown, stating that EPA has accepted C-G's request that the proposed 50 feet set-back for storage/mixing/loading be changed to a 50 feet set-back for mixing/loading only. Following language is acceptable:

"This product may not be mixed or loaded within 50 feet of intermittent streams, rivers, reservoirs, impounded or natural lakes, or within 50 feet of all wells, including abandoned wells, drainage wells, and sink holes."

EPA reviewing C-G's request for a waiver of proposed 50 feet storage set-back requirement where there are "appropriate environmental safeguards." In the interim, EPA has requested that the following storage guidance remain on the label:

"Ground water contamination may be reduced by diking and flooring of permanent liquid bulk storage sites with an impermeable material."

4/14/92 Memo to triazine team members from K. Pearce notifying that additional discussion within EPA and with C-G regarding C-G's request for waiver of 50 ft. set-back where there are appropriate safeguards. Ann Sibold (308-8033) to contact re: this issue.

4/23/92 Memo from Ann Sibold re: C-G's Educational and Surface Water Monitoring proposal.