HAZARDOUS WASTE MANAGEMENT

Minimize the quantities of hazardous waste generated and emphasize upgrading to co-product status those wastes which cannot be eliminated. For the remaining wastes, select treatment/disposal practices taking into consideration: cost effectiveness, compliance with regulations, risks evaluation, and long-term product strategies. Establish Monsanto monitored and/or controlled disposition of all solid wastes. Reduce Monsanto's dependency on landfill and deep-well injection of wastes.

INTRODUCTION

The general order of preference for treatment/disposal of hazardous waste will be:

1. Biological, chemical, or physical treatment of the waste to convert it to usable or innocuous material.
2. Thermal destruction or separation of hazardous constituents in the waste with energy or raw material recovery where feasible.
3. Deep-well disposal, limited to individual process waste streams approved by the EPC.
4. Land and ocean disposal of wastes not amenable to practical alternatives.

Operating companies will utilize the most cost effective mix of Monsanto owned or approved contractor facilities with proper regard for long-term security and liability.

PROGRAM

The following action program applies only to Monsanto's U.S. operations. Specific programs for ex-U.S. operations will be developed later after more experience has been gained with the U.S. program. In the meantime, ex-U.S. operations will continue to dispose of their wastes in conformance with host country regulations, the dictates of social responsibility and the intent of the above order of preference of treatment/disposal methods.

1. **Hazardous Waste Reduction**
   Implement in 1983 a hazardous waste reduction effort in each operating company in accordance with the approved corporatewide control and reporting guidelines.

2. **Co-Product Utilization**
   Each operating company assign by January 1, 1983 an individual with responsibility for co-product utilization.

3. **Waste Management Plans**
   Each operating company will prepare annual waste management plans beginning in 1983 as part of the long-range environmental and long-range business plans. The 1984 plan will include the operating and financial impacts of compliance with the premises indicated below in respect to treatment and disposal of hazardous wastes. The results of the 1984 plan will be reviewed corporatewide for any indicated mid-course corrections in the program.

4. **Waste Treatment/Disposal Practices**
   Unless excluded with the approval of the EPC, hazardous waste streams will be treated or disposed of in accordance with the following guidelines:

   a. Phase out of landfill disposal by January 1, 1986, of all incinerable hazardous waste (~6,000 BTU/lb. or readily blendable with other local waste to 6,000 BTU/lb.).

   b. Fix, stabilize, encapsulate or otherwise render insoluble or immobile by January 1, 1988, those hazardous wastes disposed of in landfills.

   c. Begin work immediately on detoxifying prior to land disposal those wastes defined as "acutely" hazardous by either governmental or Monsanto definition.

   d. Employ ocean dumping of hazardous wastes only on an emergency basis and with the appropriate permits.

   e. Deep-well injection will continue to be used. However, in anticipation of future restrictions on this option, Monsanto will continue to reduce dependency on deep-well injection. Reduced dependency includes: reducing injection volume, preparing alternate disposal plans, rendering streams nonhazardous.

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STATUS/OBSERVATIONS

1. ***Solid Waste Control**-Establish Monsanto monitored and/or controlled disposition of all solid wastes.

   a. **U.S. LOCATIONS**

   - Waste characterization/analysis programs are in place for all Monsanto U.S. sites.
   - All U.S. hazardous wastes are disposed under written contract or purchase order.
   - Corporate contracts are under negotiations with five U.S. disposal firms presently handled by purchase order.
   - Inspection/monitoring of off-site disposal locations is practiced using standardized inspection format and reporting. Routine schedule of inspections established on a two-year cycle.
   - Disposal site operators provided with relevant information on individual wastes properties and safe handling practices.

   b. **EX-U.S. LOCATIONS**

   - Waste characterization/analysis programs are in place for all locations.
   - All ex-U.S. locations dispose of hazardous waste under written contract agreement or negotiation/agreement on a case-by-case basis.
   - Nonhazardous solid wastes are disposed of at local government operated landfills and/or under written contract agreements with private disposal firms.
   - Inspection/monitoring of off-site disposal locations as consistent with local laws/regulations on an established schedule.
   - Disposal site operators provided with relevant information on individual waste properties and safe handling practices consistent with local environmental laws/regulations.

2. ***Deep-Well Injection**-Reduce Monsanto's dependency on deep-well injection of wastes and maintain surveillance of secure operation and performance of existing wells.
   - No deep wells operated and none planned at ex-U.S. locations.
   - Eight deep wells in operation at four U.S. plant locations plus three spare wells presently approved for installation.
   - Existing and planned flows into the U.S. location deep wells total 3400 gpm. Some of the reduction reflects current reduced plant activity.
   - Alternate disposal technology is known and under ongoing development work for all processes.
   - Off-site deep-well disposal is employed for one process waste streams on a nonroutine basis.
   - On-the-shelf technology for alternates to disposal wells are available with only minor verification work to be completed.
   - Costs for implementing the alternative disposal technologies are estimated at about $230M. Regulatory and/or economic forces have not triggered implementation.

3. **Hazardous Waste Management Program**
   - Hazardous Waste Management Study was completed. The recommendations were supported by the Manufacturing Management Council and approved by the Environmental Policy Committee. Recommendations of the study comprise the program section of the revised guideline.
   - Hazardous waste management plans and hazardous waste reduction programs are under development.

*Applicable portions of current programs will remain in effect until an approved corporatewide hazardous waste management plan is in effect.

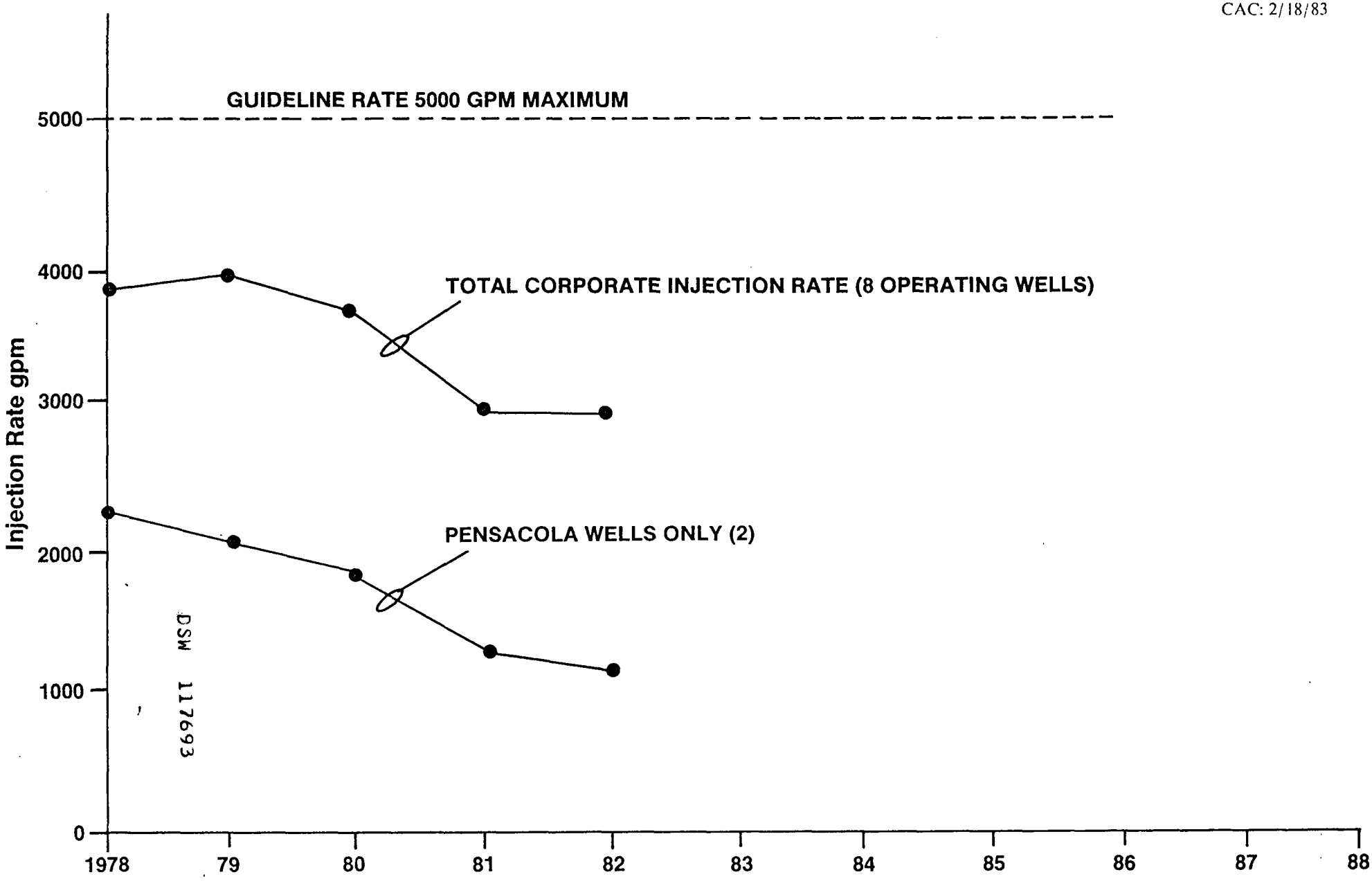
(Revised and Approved: Corporate Administrative Committee, February 18, 1983, as Worldwide Environmental Protection Guideline, No. 2.)

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Location **Monsanto**
Deep Well Permit Capacity **5235 gpm**

Approved by
CAC: 2/18/83



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