

SAFETY AND COMPLIANCE INSPECTION

1. LICENSEE

Dow AgroSciences

2. REGIONAL OFFICE

REGION III
US NUCLEAR REGULATORY COMMISSION
801 WARRENVILLE ROAD
LISLE IL 60532-4351

REPORT NUMBER(S)

3. DOCKET NUMBER(S)

030-327144

4. LICENSE NUMBER(S)

13-26398-01

5. DATE(S) OF INSPECTION

Jan 1, 2000

LICENSEE:

The inspection was an examination of the activities conducted under your license as they relate to radiation safety and to compliance with the Nuclear Regulatory Commission (NRC) rules and regulations and the conditions of your license. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. The inspection findings are as follows:

- ☒ 1. Based on the inspection findings, no violations were identified.
- ☐ 2. The violation(s), specifically described to you by the inspector as non-cited violations, are not being cited because they were self-identified, non-repetitive, and corrective action was or is being taken, and the remaining criteria in the NRC Enforcement Policy, NUREG-1600, to exercise discretion, were satisfied. _____ non-cited violation(s) were discussed involving the following requirement(s): _____
- ☐ 3. During this inspection certain of your activities, as described below and/or attached, were in violation of NRC requirements and are being cited. This form is a NOTICE OF VIOLATION, which is required to be posted in accordance with 10 CFR 19.11.

Information in this record was deleted
in accordance with the Freedom of Information
Act, exemptions 2
FOIA-2005-0080

STATEMENT OF CORRECTIVE ACTIONS

I hereby state that, within 30 days, the actions described by me to the inspector will be taken to correct the violations identified. This statement of corrective actions is made in accordance with the requirements of 10 CFR 2.201 (corrective steps already taken, corrective steps which will be taken, date when full compliance will be achieved). I understand that no further written response to NRC will be required, unless specifically requested.

TITLE	PRINTED NAME	SIGNATURE	DATE
LICENSEE			B/4
NRC INSPECTOR	D. A. [unclear]	[unclear]	11/1/2000

APPENDIX A

INDUSTRIAL/ACADEMIC/RESEARCH INSPECTION RECORD

Region III

Inspection Report No. 2000-001

License No. 13-26398-01

Licensee (Name and Address):

Docket No. 030-32714

Dow AgroSciences
9330 Zionsville Road
306 Building, E2-1010
Indianapolis, IN 46268-1054

Licensee Contact: Heidi Dixon-White, RSO

Telephone No. 317.337.3609

Priority: F1A 2

Program Code: 03610

Date of Last Inspection: 9/10-11/97

Date of This Inspection: 11/1/2000

Type of Inspection:

() Announced

(X) Unannounced

(X) Routine

() Special

() Initial

Next Inspection Date 11/2003

() Normal () Reduced (X) Extended

Justification for change in normal inspection frequency: **Based on the criteria in MC 2800, inspection frequency extended based on good inspection history**

Summary of Findings and Actions:

(X) No violations cited, clear U.S. Nuclear Regulatory Commission (NRC) Form 591 or regional letter issued

() Non-cited violations (NCVs)

() Violation(s), Form 591 issued

() Violation(s), regional letter issued

() Follow up on previous violations

Inspector(s)

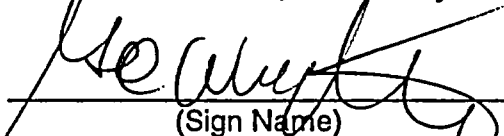


(Sign Name)

Deborah A. Piskura, Health Physicist

Date NOV 13 2000

Approved



(Sign Name)

Geoffrey C. Wright, Chief, Materials Inspection Branch

Date 11/13/00

PART I-LICENSE, INSPECTION, INCIDENT/EVENT, AND ENFORCEMENT HISTORY

1. AMENDMENTS AND PROGRAM CHANGES:

(License amendments issued since last inspection, or program changes noted in the license)

<u>AMENDMENT #</u>	<u>DATE</u>	<u>SUBJECT</u>
12	03/11/99	License renewal
13	3/24/2000	various program changes

2. INSPECTION AND ENFORCEMENT HISTORY:

(Unresolved issues; previous and repeat violations; Confirmatory Action Letters; and orders)

No violations were identified during the previous inspection. One violation was identified during the 05/17/95 inspection: 10 CFR 20.1501(b) failure to provide personnel in the receiving area with calibrated survey instruments. A Notice of Violation was issued on 6/16/95. The licensee responded to the NOV in letter dated 7/10/95 describing its corrective actions. During this inspection, no repetitive violations were identified and this item has been corrected.

3. INCIDENT/EVENT HISTORY:

(List any incidents, or events reported to NRC since the last inspection. Citing "None" indicates that regional event logs, event files, and the licensing file have no evidence of any incidents or events since the last inspection.)

According to the RSO, there have been no events or incidents since the previous inspection. The inspector confirmed this through her review of the NMED database, the license file and the regional event log.

PART II - INSPECTION DOCUMENTATION

- * References that correspond to each inspection documentation topic are in Inspection Procedure 87110, Appendix B, "Industrial/Academic/Research Inspection References."

The inspection documentation part is to be used by the inspector to assist with the performance of the inspection. Note that not all areas indicated in this part are required to be addressed during each inspection. However, for those areas not covered during the inspection, a notation ("Not Reviewed" or "Not Applicable") should be made in each section, where applicable.

All areas covered during the inspection should be documented in sufficient detail to describe what activities and procedures were observed and/or demonstrated. In addition, the types of records that were reviewed and the time periods covered by those records should be noted. If the licensee demonstrated any practices at your request, describe those demonstrations. The observations and demonstrations you describe in this report, along with measurements and some records review, should substantiate your inspection findings. Attach copies of all licensee documents and records needed to support violations.

1. **ORGANIZATION AND SCOPE OF PROGRAM:**

(Management organizational structure; authorized locations of use, including field offices and temporary job sites; type, quantity, and frequency of material use; staff size; delegation of authority)

An abbreviated organizational chart for the activities under this license was as follows:

A. Charles Fischer, President and CEO

John Tomke, P.E., V.P. Manufacturing and Operations

Martin Clark, Global Environmental Health and Safety Officer

Heldi Dixon-White, Radiation Safety Officer

Authorized Users

The Dow AgroSciences Research and Development (R&D) Center employed 1,700 individuals at its [redacted] The company operated a small, non-medical broad scope program with 15 individuals acting as "authorized users." Approximately 100+ individuals used licensed material under the supervision of the authorized users. Licensed material was used for in-vitro research and development in 30 labs. [redacted] quantities of licensed material were used at least weekly in experiments related to metabolic studies. The majority the licensee's studies involve

One laboratory used [redacted] for synthesis reactions each week. All reactions were performed within a hood which was certified annually. The company possessed numerous sealed sources including [redacted] in gas chromatographs, [redacted] in static eliminators, and exempt quantity sources within LSCs and gamma counters. At the time of this inspection, the licensee was not authorized to conduct field studies, however an amendment request for this usage was pending NRC review.

This inspection consisted of a tour of select research labs, the radioactive waste

storage areas; review of select records; interviews with licensee staff; observations of an experiment set-up; and independent radiation measurements. No violations of NRC requirements were identified during this inspection.

2. MANAGEMENT OVERSIGHT:

(Management support to radiation safety; Radiation Safety Committee (RSC); Radiation Safety Officer (RSO); program audits, including annual reviews of program and as low as is reasonably achievable (ALARA) reviews; control by authorized users)

The RSO audited the radiation safety program on a semi-annual basis. The RSO presented the audit findings at the Radiation Safety Committee (RSC) meetings. The RSO identified missing surveys, records, etc. and corrective actions were taken. Dow established an RSC to review and approve users, uses and facilities as required for a broad scope licensee. Committee members included an industrial hygienist, a biochemist, a manager. All research protocols were pre-reviewed by the RSO prior to formal submittal to and approval by the RSC. Research protocols were given a 2-year permit; afterwards the project must be reviewed for renewal. The inspector reviewed RSC meeting minutes, 1998 to YTD 2000, and found nothing unusual. Meetings were held every quarter and attendance satisfied the quorum requirements. Agenda items were pertinent and it appeared that the management provided adequate support to the radiation safety program. The RSC occasionally approved new users/uses/facilities, however the majority of its agenda was approval of amendment requests for active users and uses.

No violations were identified in this program area.

3. FACILITIES:

(Facilities as described; uses; control of access; engineering controls; calibration facilities; shielding; air flow)

Dow was authorized to use licensed material at various areas within its facility. The material was controlled, ^{Ex. 2} as a "restricted area." Access to the buildings was controlled using locks. Based on these observations and discussions with licensee personnel, the inspector determined that the licensee's facilities the same as those described in the licensee's NRC license renewal application and supporting material. In addition, the inspector concluded that the licensee adequately secured RAM within its facility.

No violations were identified in this program area.

4. EQUIPMENT AND INSTRUMENTATION:

(Operable and calibrated survey equipment; procedures; 10 CFR Part 21)

The RSO possessed several survey instruments calibrated annually by an

authorized service company. Occasionally, survey instrumentation required repairs and re-calibration which were performed by the equipment vendor. Instrumentation in certain R&D labs was only used for detection purposes and not sent out for annual re-calibration; the RSO checks these meters with a button source for operability as authorized in the license. Instrumentation available in the Radiation Safety Office and select R&D labs was found to be calibrated within the required frequency and operable.

No violations were identified in this program area.

5. MATERIAL USE, CONTROL, AND TRANSFER:

(Materials and uses authorized; security and control of licensed materials; and procedures for receipt and transfer of licensed material)

All requests for RAM must be approved by the RSO. The RSO authorized the purchasing department to place the order with the vendor. Packages were delivered to the licensee's central receiving area and transferred to the authorized users. The personnel in the receiving perform the required package surveys upon receipt. The inspector reviewed the package receipt and survey log for 2000 which indicated that radiation levels on incoming packages were within regulatory limits. Interviews with several authorized users confirmed they were knowledgeable of package receiving and survey requirements.

No violations were identified in this program area.

6. AREA RADIATION SURVEYS AND CONTAMINATION CONTROL:

(Radiological surveys; air sampling; leak tests; inventories; handling of radioactive materials; contamination controls; records; and public doses)

The radiation safety officer performed semi-annual wipe and exposure-rate surveys of all labs. The RSO performed quarterly surveys of the

These surveys were performed similar to a "mini" NRC inspection.

Individual users must perform exposure-rate surveys during the experiments and after each use. Researchers were also required to conduct direct and smear surveys within the labs at least quarterly. The inspector reviewed a sampling of survey reports for 1999-2000 and found no unusual entries or radiation levels. Occasionally, the labs identified areas with minor contamination and immediately cleaned the areas to background levels. Based on record reviews and discussions with licensee personnel, the inspector determined that daily exposure-rate and weekly contamination surveys, had been adequately performed by the licensee.

Sealed source leak tests and inventories were not reviewed during this inspection.

No violations were identified in this program area.

Ex. 2
Ex 2

7. TRAINING AND INSTRUCTIONS TO WORKERS:

(Training and retraining requirements and documentation; interviews and observations of routine work; staff knowledge of all routine activities; 10 CFR Parts 19 and 20 requirements; emergency situations; and supervision by authorized users)

The RSO provided several annual training sessions to the authorized users and ancillary personnel. New authorized users were approved after completion of job specific training. During the inspection, the inspector discussed with licensee representatives radiation safety training given to licensee personnel and reviewed those topics discussed. The inspector determined that the authorized users and lab technicians working in the R&D labs were trained prior to beginning their duties with licensed materials. The inspector interviewed several authorized users and lab technicians who demonstrated their knowledge of the license commitments and NRC requirements. No concerns or problems were noted with the licensee's training program for authorized users and the custodian.

8. RADIATION PROTECTION:

(Radiation protection program with ALARA provisions; external and internal dosimetry; exposure evaluations; dose and survey records and reports; annual notifications to workers; bulletins and other generic communications)

The inspector reviewed radiation exposure dosimetry records from 1997 to present and discussed those records with the RSO to determine if the licensee's personnel dosimetry program met regulatory and license requirements. The inspector also observed the use of personnel dosimetry by licensee personnel handling licensed materials. Based on these reviews and discussions, the inspector determined that licensee personnel were issued Landauer whole body and extremity dosimetry, exchanged on a monthly basis. The licensee had not used any materials ^{in quantities requiring routine bioassay} measurements since the last inspection. Ex. 2

Based on the above referenced reviews, discussions, and observations, the inspector determined that the licensee was maintaining personnel radiation exposures ALARA and that no individual exceeded NRC regulatory radiation exposure limits. The following table summarizes the maximum annual personnel exposures in mSv (in mRem):

<u>Year</u>	<u>TEDE</u>	<u>SDE</u>
1997	M	0.6 (60)
1998	M	3.5 (350)
1999	M	1.5 (150)
- 9/2000	0.3 (28)	M

No violations were identified in this program area.

9. RADIOACTIVE WASTE MANAGEMENT:

(Disposal; effluent pathways and control; storage areas; transfer; packaging, control, and tracking procedures; equipment; incinerators, hoods, vents, and compactors; license conditions for special disposal method)

Dow held all short-lived radwaste (liquids, solids, etc.) for DIS. Review of the licensee's disposal log indicated that survey readings were indistinguishable from background. Dow transferred long-lived radwaste to its [] for incineration as authorized by the license. Ex 2 En 2

No violations were identified in this program area.

10. DECOMMISSIONING:

(Records relevant to decommissioning; decommissioning plan/schedule; notification requirements; cost estimates; funding methods; financial assurance; and Timeliness Rule requirements; changes in radiological conditions since decommissioning plan was submitted)

This licensee maintained all records of surveys, leak tests, and disposal/transfers for future decommissioning purposes. In 1995, the licensee submitted a decommissioning plan and cost estimates for its facility. The RSO indicated that no changes were made to this decommissioning plan since the previous inspection.

11. TRANSPORTATION:

(Quantities and types of licensed material shipped; packaging design requirements; shipping papers; hazardous materials (HAZMAT) communication procedures; return of sources; procedures for monitoring radiation and contamination levels of packages; HAZMAT training; and records and reports)

This program area was not reviewed.

12. NOTIFICATIONS AND REPORTS:

(Reporting and follow up of theft; loss; incidents; overexposures; change in RSO, authorized user; and radiation exposure reports to individuals)

According to the RSO, the licensee has not experienced any fires, events or incidents involving licensed material since the previous inspection.

13. POSTING AND LABELING:

(Notices; license documents; regulations; bulletins and generic information; posting of radiation areas; and labeling of containers of licensed material)

During the inspection, the Inspector observed that those areas within the licensee's facility where radioactive materials were used and stored had been adequately posted with appropriate radiation postings to warn individuals of the

radiation hazards associated with those areas. The inspector toured the ^{Ex2} and found that these areas were posted with the appropriate signs. Bench tops were also labeled to indicate the location of RAM use within each lab. In addition, the inspector observed that the gas chromatography units, sealed sources, and stock solution vials had appropriate labels to identify the radioactive materials in them.

No violations were identified in this program area.

14. INDEPENDENT AND CONFIRMATORY MEASUREMENTS:

(Areas surveyed, both restricted and unrestricted, and measurements made; comparison of data with licensee's results and regulations; and instrument type and calibration date)

NRC survey instrument: Ludlum Model 2402, calibrated 12/9/99.

A side-by-side comparison of selected licensee's survey instruments and the inspector's instrument was made with a 1 μ Ci Cs-137 check source. All instruments were within 20% agreement.

Direct radiation surveys were performed around the waste storage areas, material storage areas, and on the bench surfaces in select research labs. These measurements were in agreement with the licensee's survey records. Radiation levels in the laboratory areas were no greater than 0.05 mR/hr. All radiation levels in unrestricted areas were less than background (0.02 mR/hr).

15. VIOLATIONS, NCVs, AND OTHER SAFETY ISSUES:

(State requirement and how and when licensee violated the requirement. For NCVs, indicate why the violation was not cited. Attach copies of all licensee documents needed to support violations.)

On the day of the exit meeting with the licensee staff, a NRC Form-591 was issued which indicated that no violations of NRC requirements were identified.

16. PERSONNEL CONTACTED:

[Identify licensee personnel contacted during the inspection (including those individuals contacted by telephone).]

#*Heldi Dixon-White, RSO

#*Josie Erman, Rad Tech

#*Eric Hobson, Esq.

#*Beth Swisher, Ph.D., RSC Chair

*Martin Clark, Global Environmental Health and Safety Officer

Albert Schuster, Senior Scientist

Wilas Nirunsuksiri, Ph.D.

Ed Olberding

Joel Sheets
Steve Clonce
Jim Donnelly
Numerous lab personnel were also contacted

Use the following identification symbols:
Individual(s) present at entrance meeting
* Individual(s) present at exit meeting

17. PERFORMANCE EVALUATION FACTORS (PEFs):

- | | | |
|----|--|---------------------|
| A. | Lack of senior management involvement with the radiation safety program and/or RSO oversight | () Y (X) N |
| B. | RSO too busy with other assignments | () Y (X) N |
| C. | Insufficient staffing | () Y (X) N |
| D. | RSC fails to meet or functions inadequately | (X) N/A () Y () N |
| E. | Inadequate consulting services or inadequate audits conducted | (X) N/A () Y () N |

Remarks (Consider the above assessment and/or other pertinent PEAS with regard to the licensee's oversight of the radiation safety program.):

18. SPECIAL CONDITIONS OR ISSUES:

(Special license conditions; year-2000 effects of computer software and embedded systems)

PART III - POST- INSPECTION ACTIVITIES

1. REGIONAL FOLLOW UP ON PEAS: **NONE**

2. DEBRIEF WITH REGIONAL STAFF:

[Post-inspection communication with supervisor, regional licensing staff (if separate), Agreement State Officer; and/or State Liaison Officer]

The inspector discussed her inspection findings with her supervisor and division management on 11/7/2000.

3. YEAR-2000 ISSUES:

(Convey, to the NESS Year-2000 Coordinator, all year-2000 licensee-identified problems and corrective actions taken.)

End

Attachment:

A. "Decommissioning Timeliness Inspection"

APPENDIX A - ATTACHMENT A
DECOMMISSIONING TIMELINESS INSPECTION

Licensee: Dow AgroSciences

Date of Inspection: Inspection: 11/1/2000

1. COMPLIANCE WITH DECOMMISSIONING TIMELINESS RULE
(NOTE: Repeat the answers given in Section 10 of the main body of the inspection record. The issues in subsequent sections depend on the answers to these questions.)

A. License to conduct a *principal activity* has expired or been revoked () Y (X) N

B. Licensee has made a decision to permanently cease *principal activities*, at the entire site, or at any separate buildings, or at any outdoor areas, including inactive burial grounds. () Y (X) N

C. A 24-month duration has passed in which no *principal activities* have been conducted under the license at the site, or at any separate buildings, or any outdoor areas, including inactive burial grounds. () Y (X) N

D. If "Yes" to either A or B or C above:

(1) Identify Site/Bldg./Area: _____

(2) Date of occurrence of A, B, or C: _____

2. NOTIFICATION REQUIREMENTS Not Applicable

A. Licensee has provided written notification to the U.S. Nuclear Regulatory Commission (NRC) within 60 days of the occurrence of 1.A., 1.B., or 1.C., above. () Y () N

If "Yes," date of notification: _____

B. If the licensee is requesting to delay initiation of the decommissioning process, the licensee has provided written notification to NRC within 30 days of occurrence of 1.A., 1.B., or 1.C. above. () N/A () Y () N

If "Yes," date of notification: _____

Basis for Findings:

3. DECOMMISSIONING PLAN/SCHEDULE REQUIREMENTS

Issue Date: 04/05/99

AA-1

87110. Appendix A, Att. A

- A. Licensee is required to submit a decommissioning plan per 10 CFR 30.36(g); 10 CFR 40.42(g); 10 CFR 70.38(g); or 10 CFR Part 72? ☐ Y ☐ N

If "No" to 3.A., answer the following items B. - F.:

- B. The decommissioning work scope is covered by current license conditions. ☐ Y ☐ N

- C. Decommissioning has been initiated within 60 days of notification to NRC, or NRC has granted a delay. ☐ Y ☐ N

- D. If licensee has initiated decommissioning, give date the decommissioning was initiated:

Initiation date: _____

- E. If decommissioning has been completed, it was completed within 24 months of notification to NRC. ☐ N/A ☐ Y ☐ N

- F. If decommissioning is still scheduled to be completed, it is on schedule to be completed within 24 months of notification to NRC. ☐ N/A ☐ Y ☐ N

Basis for Findings:

If "Yes" to 3.A., answer the following items G. - J.:

- G. The decommissioning plan has been submitted to NRC within 12 months of notification. ☐ Y ☐ N

If "Yes," date of submittal: _____

If NRC approved, date of NRC approval: _____

- H. Has the licensee submitted an alternative schedule request? ☐ Y ☐ N

If "Yes," date of submittal: _____

- I. If decommissioning has been completed, it was completed within 24 months after approval of the decommissioning plan. ☐ N/A ☐ Y ☐ N

- J. If decommissioning is still scheduled to be completed, it is on schedule to be completed within 24 months after approval of the decommissioning plan. ☐ N/A ☐ Y ☐ N

Basis for Findings:

Violations identified, if any: **NONE**