June 18, 2014

Paul J. O'Connor, Ph.D.
Facility Director
Dow Chemical TRIGA Research Reactor
Dow Chemical Company
Building 1602
Midland, MI 48674

SUBJECT: DOW CHEMICAL COMPANY – ISSUANCE OF RENEWED FACILITY OPERATING LICENSE NO. R-108 FOR THE DOW TRIGA RESEARCH REACTOR (TAC NO. ME1595)

Dear Dr. O'Connor:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Renewed Facility Operating License No. R-108 for the Dow Chemical Company, Dow TRIGA Research Reactor in response to your application for license renewal dated April 1, 2009, as supplemented by letters dated September 24, 2010; January 12, February 11, April 20, May 12, May 27, August 12, August 31, October 12, November 10, and December 6, 2011; January 13, January 20, February 7, June 11, and August 10, 2012; July 11, and September 16, 2013; and April 9, 2014. The renewed facility operating license is effective on date of issuance, and shall expire at midnight 20 years from the date of issuance, unless terminated sooner.

In accordance with agency practice, the NRC has restated the license in its entirety, incorporating all changes and amendments made since the issuance of the original license. Also enclosed with the renewed facility operating license is the safety evaluation report associated with the license renewal. A Notice of Issuance of Renewed Facility Operating License No. R-108 is being sent to the Office of the Federal Register for publication. The environmental assessment was published in the *Federal Register* on July 20, 2012 (77 FR 42771), as supplemented on May 8, 2013 (78 FR 26811).

If you have any questions, please contact me at 301-415-0893 or by electronic mail at Geoffrey.Wertz@nrc.gov.

Sincerely,

/RA/

Geoffrey A. Wertz, Project Manager
Research and Test Reactors Licensing Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-264

Enclosures:
1. Facility Operating License No. R-108
2. Safety Evaluation Report

cc: See next page

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Sincerely,

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***Concurrence via email** NRR-106

ADAMS Accession No: Pkg: ML12137A053; Ltr:ML12137A151; App. A (TS):ML12137A171; SER:ML12137A181

OFFICE	NRR/DPR/PRLB/PM*	Tech Editor*	NRR/DPR/PRLB/LA	OGC NLO
NAME	GWertz	JDougherty	PBlechman	BMizuno
DATE	5/6/2014	5/15/2012	5/6/2014	5/30/2014
OFFICE	NRR/DPR/PRLB/BC	NRR/DPR/D	NRR/D	NRR/DPR/PRLB/BC
NAME	AADAMS	LKokajko	ELeeds	GWertz
DATE	6/9/2014	6/12/2014	6/18/2014	6/18/2014

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cc:

Office of the Mayor
333 West Ellsworth
Midland, MI 48640

Office of the Governor
Room 1 – Capitol Building
Lansing, MI 48913

Ms. Shari Kennett
Environmental Health and Safety Responsible Care Leader
Chair, Radiation Safety Committee
The Dow Chemical Company
1790 Building
Midland, MI 48674

Dr. Wayde Konze
Global Research and Development Director for Analytical Sciences
Chair, Reactor Operations Committee
The Dow Chemical Company
1897 Building
Midland, MI 48667

Test, Research, and Training
Reactor Newsletter
University of Florida
202 Nuclear Sciences Center
Gainesville, FL 32611

Radiological Protection Section
Office of Waste Management and Radiological Protection
Michigan Department of Environmental Quality
525 West Allegan Street
P.O. Box 30473
Lansing MI 48909-7973

Enclosure 1

Dow Chemical Company
Docket No. 50-264
Facility Operating License

ADAMS Accession No. ML12137A151

THE DOW CHEMICAL COMPANY

DOCKET NO. 50-264

FACILITY OPERATING LICENSE

License No. R-108

1. The U.S. Nuclear Regulatory Commission ("the Commission") has found that:

   A. The application for renewal of Facility Operating License No. R-108 filed by the Dow Chemical Company ("the licensee"), dated April 1, 2009, as supplemented on September 24, 2010; January 12, February 11, April 20, May 12, May 27, August 12, August 31, October 12, November 10, and December 6, 2011; January 13, January 20, February 7, June 11, and August 10, 2012; July 11, and September 16, 2013; and April 9, 2014 ("the application"), complies with the standards and requirements of the Atomic Energy Act of 1954, as amended ("the Act"), and the Commission's rules and regulations set forth in Title 10, Chapter I, of the *Code of Federal Regulations* (10 CFR);

   B. Construction of the Dow TRIGA Research Reactor ("the facility") was completed in substantial conformity with the Construction Permit No. CPRR-94, dated December 20, 1966, and the application as amended, the provisions of the Act, and the rules and regulations of the Commission;

   C. The facility will operate in conformity with the application, as supplemented, the provisions of the Act, and the rules and regulations of the Commission;

   D. There is reasonable assurance that: (i) the activities authorized by this license can be conducted at the designated location without endangering the health and safety of the public, and (ii) such activities will be conducted in compliance with the Commission's regulations;

   E. The licensee is technically and financially qualified to engage in the activities authorized by this license in accordance with the rules and regulations of the Commission;

   F. The licensee has satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements," of the Commission's regulations;

G. The Dow Chemical Company is a United States corporation. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public;

H. The issuance of this license is in accordance with 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," of the Commission's regulations and all applicable requirements; and

I. The receipt, possession and use of byproduct and special nuclear materials as authorized by this facility operating license will be in accordance with the Commission's regulations in 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material," and 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material."

2. Accordingly, Facility Operating License No. R-108 is hereby renewed in its entirety to read as follows:

A. This license applies to the Dow TRIGA Research Reactor (herein "the facility") owned by the Dow Chemical Company (herein "the licensee"). The facility is located on the licensee's site in Midland, Michigan, and is described in the licensee's application for license renewal, dated April 1, 2009, as supplemented.

B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses Dow Chemical Company as follows:

(1) Pursuant to subsection 104c of the Act and 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," to possess, use, and operate the facility as a utilization facility at the designated location in accordance with the procedures and limitations described in the application and set forth in this license.

(2) Pursuant to the Act and 10 CFR Part 70, the following activities are included:

a. to receive, possess, use, but not separate, in connection with operation of the facility, up to 3400 grams of contained uranium-235 enriched to less than 20 percent in the form of TRIGA fuel;

b. to receive, possess, use, but not separate, in connection with operation of the facility, up to 10 grams of contained uranium-235 enriched to any enrichment in the form of nuclear fission chambers; and

c. to receive, possess, use, but not separate, in connection with operation of the facility, such special nuclear material as may be produced by the operation of the facility.

(3) Pursuant to the Act and 10 CFR Part 30, the following activities are included:

a. to receive, possess, and use, in connection with the operation of the facility, a 2.0-curie sealed americium-beryllium neutron startup source; and

b. to receive, possess, and use, in connection with operation of the facility, such byproduct material as may be produced by operation of the reactor, which can not be separated except for byproduct material produced in experiments.

C. This license shall be deemed to contain and is subject to the conditions specified in 10 CFR Parts 20, 30, 50, 51, 55, 70, and 73 of the Commission's regulations; is subject to all applicable provisions of the Act, and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at a steady-state power level not in excess of 300 kilowatts (thermal) as specified in the Technical Specifications.

(2) Technical Specifications

The Technical Specifications contained in Appendix A are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Physical Security Plan

The licensee shall maintain and fully implement all provisions of the Commission-approved physical security plan, including amendments and changes made pursuant to the authority of 10 CFR 50.54(p). The approved physical security plan entitled "Dow TRIGA Research Reactor Security Plan," dated September 16, 2013, consists of documents withheld from public disclosure pursuant to 10 CFR 73.21.

(4) Negation Action Plan

a. The Dow Chemical Company Resolution included with the supplement dated January 13, 2012, and the representations made in the application regarding reporting relationships and authority over safety and security issues, shall be adhered to and may not be modified in any respect concerning the decision making authority of the Dow Chemical Company over the Dow TRIGA Research Reactor without the prior written consent of the Director, Office of Nuclear Reactor Regulation.

b. The Vice-President over Research and Development, who is a U.S. citizen, shall have exclusive executive authority over the Dow TRIGA Research Reactor. If at any time the Vice-President over Research and Development is not a U.S. citizen, then at such time the exclusive authority over the nuclear reactor and its special nuclear materials will be transferred to an executive of at least the rank of Vice-President who is a U.S. citizen. This individual shall ensure that the business and activities of the Dow Chemical Company with respect to the Dow TRIGA Research Reactor are at all times conducted in a manner consistent with the public health and safety and common defense and security of the United States.

This license is effective as of the date of issuance and shall expire at midnight, twenty years from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Eric J. Leeds, Director
Office of Nuclear Reactor Regulation

Attachment:
Appendix A, Technical Specifications

Date of Issuance: June 18, 2014