

COOPERATIVE AGREEMENT TO IDENTIFY AND REDUCE MERCURY EMISSIONS

I. Objective of Proposal

As the issue of fugitive emissions from mercury cell chlor-alkali plants is one of current environmental concern and the subject of both recent rule making (See 68 Fed. Reg. 70904, December 19, 2003) and litigation (See Natural Resources Defense Council, et al. v. U.S. EPA, et al, D.C. Cir. No. 04-1048, filed February 17, 2004), Occidental Chemical Corporation (OxyChem) approached DNREC to discuss a methodology to appropriately quantify the mercury fugitive emissions from its facility, a mercury cell chlor-alkali plant located at 1657 River Road, New Castle, DE.

The Delaware City facility has proactively undertaken several activities to reduce mercury emissions, and has started projects aimed at better quantifying fugitive emissions from the site. A summary of this work is as follows:

- OxyChem has completed the following activities since March 2004 related to point source emissions:
 - Secured approval from DNREC to install second carbon bed for retort point sources (2). The materials are on order; the installation is scheduled to be completed by May 2005.
 - Completed modifications to operate back up scrubber in series with vapor vent chiller to reduce emissions from the Vapor Vent system. Status – awaiting final approval to start-up from DNREC.
 - Initiated a test to measure mercury concentration in Endbox vent stream continuously using the single point UV meter from Mercury Instruments.

When complete, these projects will either reduce mercury emissions or provide a better estimate of point source-related emissions.

- OxyChem has also completed the following activities since March 2004 related to fugitive mercury emissions:
 - Tested prototype, single point mercury analyzer unit for 4 months.
 - Purchased, installed and wired a mercury monitoring system (MMS) unit in the cell building, and installed sample lines throughout the building.
 - Submitted instrument details to DNREC.
 - Submitted Energy Balance air flow methodology to DNREC.
 - Successfully completed system communication verification with the plant's Distributed Control System (DCS).
 - Modified the air flow calculation to compute mercury emissions in the DCS.
 - Conducted 18 energy balance air flow calculations.
 - Used data to improve housekeeping and practices based on results from a single point measurement unit.

In all, the Delaware City facility has completed or initiated a number of projects that are aimed at reducing mercury emissions from the facility.

In addition to the emission reduction projects described above, the Delaware City facility idled one circuit, approximately 50% of capacity, on June 3, 2003, and it remains idle as of this date. The idling of the circuit has also resulted in reduced mercury emissions from the facility, which will be reflected in future mercury emission estimates.

The proposal described in the following text will augment the work already being done at the facility.

The parties are committed to working in an open and collaborative atmosphere to encourage, pursue, and test new ideas that work towards furthering our environmental goals and enhanced environmental performance. This proposal is not intended to supercede any other agreement between DNREC, the U.S. Environmental Protection Agency (EPA), and any other party.

II. Principles

This proposal will be conducted in accordance with the following principles:

- A. **Experimentation:** OxyChem has committed to perform a study of fugitive mercury emissions from the mercury cell building within its chlor-alkali facility. OxyChem will accomplish this study by installing a MMS Mercury Monitoring System supplied by Mercury Instruments, GmbH, of Germany. This instrument will draw samples from sixteen monitoring points. The system utilizes an Ultra Violet Photometer to detect mercury based on the UV absorption of mercury at 253.7 nm. Pilot studies conducted by OxyChem utilizing this technology have produced favorable results. Four (4) sample points will be monitored in each of the four quadrants of the cell building to provide a baseline for establishing average mercury concentrations that will be correlated with representative air flow calculations for the cell building. The monitored concentrations will be integrated into the facility's realtime DCS that calculates air flow through the building. This is expected to result in the ability to estimate the mass of fugitive mercury emissions emitted from the cell building via the roof ridge vent system. The data from the individual monitoring points will be analyzed to localize instances of higher mercury concentrations. This localization will provide the ability to analyze what activities may be causing increased emissions of fugitive mercury. These activities can then be studied to reduce these emissions.
- B. **Environmental Performance:** Work done pursuant to this proposal will have no adverse impact upon environmental protection, public access to information, or public access to the decision making process. On the contrary, this proposal would seek to not only enhance the public's understanding of mercury emissions from the facility at issue, but also will explore means by which emissions reductions can be achieved.
- C. **Smarter Approach:** By conducting comprehensive monitoring of cell room fugitive emissions, the regulatory agencies, OxyChem and the public will have a greater understanding of the fugitive emissions from the facility, and opportunities for emission reductions.

- D. Stakeholder Involvement: This proposal contemplates complete cooperation between OxyChem, DNREC, and EPA. Moreover, information derived from this proposal will be shared. Once actual monitoring of mercury fugitive emissions has begun, OxyChem will share such monitoring data with DNREC and EPA as described below. OxyChem will not claim this monitoring data to be Confidential Business Information pursuant to 40 C.F.R. Part 2 and DNREC and EPA may distribute this information to the public, including those participating in the development of the rule making cited above.
- E. Measuring and Verifying Results: The monitoring period, for purposes of this agreement, will begin on April 1, 2005, at which time the facility will begin to collect data. The study period will run for one year, as further discussed below. If, during the course of the study, OxyChem should select another form of technology to perform the monitoring, OxyChem will provide DNREC and EPA with an opportunity to review and comment on the proposed change.

Six months after the system has been in full operation, OxyChem will provide DNREC and EPA with a report of cell room-related mercury emissions, as estimated by the system, containing mass emission rates (averaged on a monthly basis) for the period. On a monthly basis thereafter, for a period of an additional six months, the facility will continue to provide DNREC and EPA with an updated report containing mass emission rates (averaged on a monthly basis), and a rolling six-month average of cell room mercury emissions, as estimated by the system.

DNREC and EPA personnel will be able to review data from the system at the facility during regular business hours. DNREC and EPA will make arrangements with the facility for such project related data reviews in advance to ensure the availability of appropriate facility personnel.

OxyChem will be continually evaluating mercury reduction opportunities at the facility and will report on its efforts to DNREC and EPA on a quarterly basis for the study period. Such reports will be submitted to DNREC and EPA by July 15 and October 15, 2005, and January 15 and April 15, 2006. The facility's mercury fugitive emissions as reported in the TRI reports covering calendar year 2002 will serve as one of the baselines from which emissions reductions will be calculated. The other baseline which will be used will be the mercury emissions established after one full year of operation of the monitoring system. This second baseline shall be used in order to compare mercury fugitive emissions for years following the conclusion of the study period. OxyChem has indicated that it intends to operate the monitors as long as the plant is operating.

- F. State-EPA Partnership: DNREC and EPA will work jointly in developing, implementing, monitoring, and evaluating OxyChem's study. Both DNREC and EPA will retain their existing roles in administering the nation's environmental programs. DNREC and EPA will emphasize early and frequent communication, cooperation, and partnership in undertaking their respective roles, both existing and specific to this proposal.

Any questions regarding this agreement can be directed to the following persons:

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Signatories

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/S/	4/1/05
_____ Stephen B. Kemp Vice-President Health, Environment, Safety and Security Occidental Chemical Corporation	Date
/S/	4/6/05
_____ John A. Hughes Secretary Delaware Department of Natural Resources and Environmental Control	Date