

DEPARTMENT: POLLUTION CONTROL AGENCY

STATE OF MINNESOTA

Office Memorandum

DATE: August 6, 2002

TO: Rita-Messing
Research Scientist Supervisor
Site Assessment & Consultation Unit
Minnesota Department of Health

Larry Gust
Research Scientist Supervisor
Health Risk Assessment Unit
Minnesota Department of Health

FROM: ^{dlw}Douglas W. Wetzstein
Supervisor
Superfund Unit 1/Superfund Section
Majors and Remediation Division

PHONE: (651) 297-8609

SUBJECT: Request for Development of Industrial Soil HBV for PFOS & PFOA Compounds

The Minnesota Pollution Control Agency (MPCA) is currently working with 3M to develop plans to decommission the old 3M Cottage Grove Hazardous Waste Incinerator unit. During this work effort, the above ground structures and equipment will be removed. Some soil will potentially be excavated as below ground structures are removed. The MPCA has required that, as part of the soil sampling at the site, soil samples be analyzed for Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic acid (PFOA) compounds. These compounds were produced at the site and were thermally treated in the incinerator unit that is being removed.

In a recent meeting with 3M Company staff, they agreed to sample soil for these compounds. However, concern was expressed by 3M that there was not an established Health Based Value (HBV) for ground water developed for these compounds and that Soil Reference Value's (SRV's) for soil for an industrial setting had not been developed. If the compounds are found above concentrations which present a risk, the MPCA would require that soil be removed to meet industrial SRV's. Concern was expressed by 3M project staff that the lack of SRV's for these compounds may lead to extensive delays in completion of the demolition work while SRV's are developed. To avoid such delays, 3M has made a request to MPCA staff that SRV's be developed as soon as is possible for both PFOS and PFOA compounds.

The MPCA sees the need for SRV's for these compounds and requests that the Minnesota Department of Health develop Industrial based SRV's. It is anticipated that soil sampling and excavation for the 3M project could occur as soon as October of this year. The work is scheduled to be completed and the excavations closed before winter arrives. We realize that this is a complex issue and that the required time frame is rather short.

Ms. Rita Messing and Mr. Larry Gust

August 6, 2002

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It is our understanding that 3M has developed an HBV for ground water that is currently under review by your staff. If time is available, we request that a HRL for ground water and SRV's for soil be developed. In the absence of time for Health to accomplish development of a ground water HBV and soil SRV's, the MPCA requests that interim soil SRV's be developed using 3M's ground water HBV. The interim soil numbers could be used so the soil removal, associated with removal of the old 3M Hazardous Waste Incinerator, can be completed this fall. In the event that more stringent soil numbers are developed by Health, at a later date, the adequacy of the soil cleanup can be revisited to determine if excessive risk exists.

Please consider our request for development of SRV's for PFOS and PFOA and let us know your thoughts on the request. If you have further questions, please feel free to contact Thomas Townsend at (651) 297-8375, or John Betcher at (651) 296-7821 who are the MPCA staff assigned to the 3M Cottage Grove Incinerator project.

DWW:csa

cc: Thomas Townsend, Majors and Remediation Division
Crague Biglow, Majors and Remediation Division
Bruce Brott, Majors and Remediation Division

Memo



Date: November 20, 2002

To: Douglas Wetzstein
Dave Douglas

From: Helen Goeden, Health Risk Assessment Unit

Phone: (651) 215-0874

Subject: Response to Request for Health Based Values and interim Soil Reference Values

This memorandum is in response to a request by the Minnesota Pollution Control Agency (08/21/02) for Health Based Values (HBVs) and interim Soil Reference Values (SRVs) for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS).

There is limited published information on the toxicity of PFOA and PFOS. The MDH relied heavily on readily available toxicity summary information provided by 3M, EPA and the West Virginia Department of Environmental Protection. After reviewing this information the MDH modified the RfD and RfC values proposed by 3M.

Health Based Values (HBVs)

<u>Chemical</u>	<u>CAS #</u>	<u>Endpoint</u>	<u>RfD</u> (mg/kg/d)	<u>HBV</u> µg/L
PFOA	3825-26-1	Liver	0.001	7
PFOS	2795-39-3/ 1763-23-1	Liver	0.0002	1

Soil Reference Values (SRVs)

<u>Chemical</u>	<u>CAS#</u>	<u>Endpoint</u>	<u>RfD</u> (mg/kg/d)	<u>RfC</u> (mg/m ³)	<u>Residential</u> <u>SRV (mg/kg)</u>	<u>Industrial</u> <u>SRV (mg/kg)</u>
PFOA	3825-26-1	Liver	0.001	2E-5	30	200
PFOS	2795-39-3/ 1763-23-1	Liver	0.0002	2E-5	6	40

Toxicity Value Sources: See Attachment II.

Based on information currently available we feel that the above values will provide an adequate level of protection from exposure to PFOA and PFOS in drinking water and direct exposure to PFOA or PFOS in soil; however, there is a degree of uncertainty associated with the HBVs and SRVs, and they should be considered provisional. The above criteria do not address impacts to groundwater as a result of soil leaching, food chain impacts or ecological impacts.

Please note that carcinogenicity studies in the rat have shown PFOA and PFOS to be potentially carcinogenic. However, at this time the available data are not sufficient to determine relevance to humans or for development of cancer potency values.

Environmental Health Division • 121 E 7th Place, P.O. Box 64975, St. Paul, MN, 55164-0975 • (651) 215-0700
<http://www.health.state.mn.us>

The data utilized in the derivation of the HBVs is provided in Attachment I. Standard assumptions of a 70 kilogram person with a drinking water ingestion rate of 2 liters per day, and a relative source contribution of 20 percent were used to calculate these values.

MDH is in the process of revising its Health Risk Limits for groundwater rule. The MDH is likely to recommend that the standard assumptions of 70 kilograms and 2 liters/day be replaced by a body weight and an intake rate more appropriate for children. If this recommendation is accepted and promulgated as rule, HBVs would likely decrease by a factor of 3 to 4.

The data utilized in the derivation of the SRVs is provided in Attachment II. The default exposure scenarios and target risk values presented in the MPCA's Draft Guidelines for the Soil-Human Health Pathway, Technical Support Document (Working Draft, January 1999) were utilized to calculate these values.

The MDH's authority to promulgate health risk limits under the Groundwater Protection Act is limited to situations where degradation has already occurred. Similarly, the HBVs and SRVs provided are intended to serve as interim advice issued for specific sites where a contaminant has been detected. As such, neither the HBVs nor SRVs are developed for the purpose of providing an upper limit for degradation.

cc: Larry Gust, MDH
Anne Kukowski, MDH
Jim Kelly, MDH
Gerry Smith, MDH
Shelley Burman, MPCA
Luke Charpentier, MPCA
Mary Dymond, MPCA
Laura Solem, MPCA
Michael Santoro, 3M
John Butenhoff, 3M

ATTACHMENT I

DATA FOR DERIVATION OF GROUND WATER HEALTH BASED VALUE (HBV)

Compound Name: **Perfluorooctanoate (PFOA)**
 CAS #: **3825-26-1** (Oct. 16, 2002 personal communication with Dr. John Butenhof, 3M)

LOAEL (*ingestion*): **3 mg/kg/day**
 Uncertainty Factor: **3000** (3 - interspecies, 10 - intraspecies, 10 subchronic-to-chronic, 10 LOAEL-to-NOAEL)

Modifying Factor: **1**
 RfD*: **0.001 mg/kg/day**

Health effect: **Liver**

Relative Source Contribution (RSC): **20%**

Oral Slope Factor: **NA**
 Applied Risk Level: **NA**

$$\begin{aligned}
 \text{HBV} &= \frac{(\text{RfD, mg/kg/d}) (\text{RSC}) (1000 \mu\text{g/mg})}{\text{Intake Rate (2 L per day/70 kg)}} \\
 &= \frac{(0.001 \text{ mg/kg/d}) (0.2) (1000 \mu\text{g/mg})}{0.029 \text{ L/kg/d}} = 7 \mu\text{g/L}
 \end{aligned}$$

Data Sources:

1. EPA Revised Draft Hazard Assessment of Perfluorooctanoic Acid and Its Salts (Nov 4, 2002);
2. EPA Draft Hazard Assessment of Perfluorooctanoic Acid and Its Salts (Feb 2002);
3. 3M Lifetime Drinking Water Health Advisory for Perfluorooctane sulfonate (April 2002);
4. 3M Soil Screening Guidelines for PFOS (May 2002);
5. Subchronic Toxicity Studies on Perfluorooctanesulfonate Potassium Salt in Cynomolgus Monkeys. Seacat et al., Toxicological Sciences 68:249-264; 2002; and
6. 3M Soil Screening Guidelines for PFOA (March 2002).

* Carcinogenicity studies in the rat have shown PFOA to be carcinogenic. However, at this time the available data are not sufficient for a quantitative assessment. Reproductive and developmental effects, based on studies in rats and rabbits, occur at levels higher than doses causing liver toxicity. However, due to rapid elimination in female rats (serum half-life of 1 day) it is unclear to what degree the fetuses and neonates were exposed. Ovarian tubular hyperplasia has also been observed in female rats at doses as low as 1.6 mg/kg/d (note: a NOAEL was not determined for this effect since effects were observed at the lowest dose evaluated). Women do not appear to have the same active secretory mechanism that exists in the female rat.

Compound Name: **Perfluorooctanesulfonate (PFOS)**
CAS #: **2795-39-3 (potassium salt)**
1763-23-1 (free salt)
(Oct 16, 2002 personal communication with Dr. John Butenhoff, 3M)

LOAEL (ingestion): **0.15 mg/kg/day**
Uncertainty Factor: **1000** (3 - interspecies; 10 - intraspecies; 10 subchronic-to-chronic; 3 LOAEL-to-NOAEL)
Modifying Factor: **1**
RfD*: **0.0002 mg/kg/day**

Health effect: **Liver**

Relative Source Contribution (RSC) **20%**

Oral Slope Factor: **NA**
Applied Risk Level: **NA**

$$\begin{aligned}\text{HBV} &= \frac{(\text{RfD, mg/kg/d}) (\text{RSC}) (1000 \mu\text{g/mg})}{\text{Intake Rate (2 L per day/70 kg)}} \\ &= \frac{(0.0002 \text{ mg/kg/d}) (0.2) (1000 \mu\text{g/mg})}{0.029 \text{ L/kg/d}} = 1 \mu\text{g/L}\end{aligned}$$

Data Sources:

- 1) EPA Hazard Assessment and Biomonitoring Data on Perfluorooctane Sulfonate – PFOS (July 2000);
- 2) 3M Lifetime Drinking Water Health Advisory for Perfluorooctane sulfonate (April 2002);
- 3) 3M Soil Screening Guidelines for PFOS (May 2002);
- 4) Subchronic Toxicity Studies on Perfluorooctanesulfonate Potassium Salt in Cynomolgus Monkeys. Seacat et al., Toxicological Sciences 68:249-264, 2002; and
- 5) 3M Comments on Interspecies Uncertainty in Risk Assessment for PFOS

*Carcinogenicity studies in the rat have shown PFOS to be carcinogenic. However, at this time the available data are not sufficient for a quantitative assessment. Reproductive and developmental effects, based on studies in rats and rabbits, occur at levels higher than doses causing liver toxicity.

Date (Prepared or Modified): November 14, 2002
Prepared by: H. Goeden

ATTACHMENT II

DATA FOR DERIVATION OF SOIL REFERENCE VALUE (SRV)

Compound Name	Perfluorooctanoate (PFOA)
CAS #	3825-26-1 (Oct. 16, 2002 personal communication with Dr. John Butenhoff, 3M)
LOAEL (ingestion):	3 mg/kg/day
Uncertainty Factor:	3000 (3 - interspecies; 10 - intraspecies; 10 subchronic-to-chronic; 10 LOAEL-to-NOAEL)
Modifying Factor:	1
RfD*:	0.001 mg/kg/day
RfC**:	2E-5 mg/m ³
Dermal Absorption:	10% (MPCA Default for organic compounds)
Health effect:	Liver
Hazard Quotient:	0.2 (MPCA target risk value)
Oral Slope Factor:	NA
Inhalation Unit Risk:	NA
Residential SRV:	30 mg/kg
Industrial SRV:	200 mg/kg

Data Sources:

- 1) EPA Revised Draft Hazard Assessment of Perfluorooctanoic Acid and Its Salts (Nov 4, 2002);
- 2) EPA Draft Hazard Assessment of Perfluorooctanoic Acid and Its Salts (Feb 2002);
- 3) 3M Lifetime Drinking Water Health Advisory for Perfluorooctane sulfonate (April 2002);
- 4) 3M Soil Screening Guidelines for PFOS (May 2002);
- 5) Subchronic Toxicity Studies on Perfluorooctanesulfonate Potassium Salt in Cynomolgus Monkeys. Seacat et al., Toxicological Sciences 68:249-264, 2002; and
- 6) 3M Soil Screening Guidelines for PFOA (March 2002).

* Carcinogenicity studies in the rat have shown PFOA to be carcinogenic. However, at this time the available data are not sufficient for a quantitative assessment. Reproductive and developmental effects, based on studies in rats and rabbits, occur at levels higher than doses causing liver toxicity. However, due to rapid elimination in female rats (serum half-life of 1 day) it is unclear to what degree the fetuses and neonates were exposed. Ovarian tubular hyperplasia has also been observed in female rats at doses as low as 1.6 mg/kg/d (note: a NOAEL was not determined for this effect since effects were observed at the lowest dose evaluated). Women do not appear to have the same active secretory mechanism that exists in the female rat.

** There is insufficient information on the toxicological effects of PFOA following inhalation exposure. PFOA is not considered to be a volatile chemical and therefore the inhalation exposure pathway is anticipated to be a minor pathway. 3M has suggested a RfC of 2E-5 mg/m³ based on a generic exposure guideline for chemicals found to be carcinogenic in animals but with unknown relevance to humans. The CATT report generated a RfC of 1.1E-3 mg/m³. In the absence of information the provisional RfC suggested by 3M will be utilized for the development of an interim Soil Reference Value.

Compound Name: **Perfluorooctanesulfonate (PFOS)**
CAS #: **2795-39-3 (potassium salt)**
1763-23-1 (free salt)
(Oct. 16, 2002 personal communication with Dr. John Butenhoff, 3M)

LOAEL (ingestion): **0.15 mg/kg/day**
Uncertainty Factor: **1000 (3 - interspecies; 10 - intraspecies; 10 subchronic-to-chronic; 3 LOAEL-to-NOAEL)**
Modifying Factor: **1**
RfD*: **0.0002 mg/kg/day**

RfC**: **2E-5 mg/m³**

Dermal Absorption: **10% (MPCA Default for organic compounds)**

Health effect: **Liver**

Hazard Quotient: **0.2 (MPCA target risk value)**

Oral Slope Factor: **NA**

Inhalation Unit Risk: **NA**

Residential SRV: **6 mg/kg**

Industrial SRV: **40 mg/kg**

Data Sources:

Data Sources:

- 1) EPA Hazard Assessment and Biomonitoring Data on Perfluorooctane Sulfonate – PFOS (July 2000).
- 2) 3M Lifetime Drinking Water Health Advisory for Perfluorooctane sulfonate (April 2002);
- 3) 3M Soil Screening Guidelines for PFOS (May 2002);
- 4) Subchronic Toxicity Studies on Perfluorooctanesulfonate Potassium Salt in Cynomolgus Monkeys. Seacat et al., Toxicological Sciences 68:249-264, 2002; and
- 5) 3M Comments on Interspecies Uncertainty in Risk Assessment for PFOS.

*Carcinogenicity studies in the rat have shown PFOS to be carcinogenic. However, at this time the available data are not sufficient for a quantitative assessment. Reproductive and developmental effects, based on studies in rats and rabbits, occur at levels higher than doses causing liver toxicity.

**There is insufficient information on the toxicological effects of PFOS following inhalation exposure. PFOS is not considered to be a volatile chemical and therefore the inhalation exposure pathway is anticipated to be a minor pathway. 3M suggested a RfCs of 2E-4 and 2E-5 mg/m³ for PFOS and PFOA, respectively. The value for PFOA was based on a generic exposure guideline for chemicals found to be carcinogenic in animals but with unknown relevance to humans. PFOS appears to be carcinogenic in rats but it is not clear whether suggested mechanism of action is relevant to humans. In the absence of information the provisional RfC for PFOA (2E-5 mg/m³) suggested by 3M will be utilized for the development of an interim Soil Reference Value for PFOS as well.

Date (Prepared or Modified): November 14, 2002

Prepared by: H. Goeden

DEPARTMENT : POLLUTION CONTROL AGENCY

STATE OF MINNESOTA

SF-00006-05 (4/86)

Office Memorandum

DATE : March 14, 1995

TO : Gary Englund
Water Supply & Well Management
Minnesota Department of Health

FROM : Richard J. Sandberg, Manager
Site Response Section
Ground Water and Solid Waste Division

PHONE : 296-7290

SUBJECT : Memorandum of Agreement

Ground Water & Solid Waste Division
Site Response Section

Site Name

Category

Subcategory

Initials

Please find attached an executed copy of the Memorandum of Agreement (MOA) between the Minnesota Department of Health (MDH) and the Minnesota Pollution Control Agency (MPCA). We have incorporated the health based values for the list of chemicals in Deborah Peterson's February 16, 1995, memorandum into the MOA as Attachment I.

Thank you very much for your assistance in completing the MOA.

We look forward to working with you on implementing the MOA. Please contact Gary Eddy of my staff at 296-7758 if you have any questions.

RS:ch

Attachments

cc: Richard Clark, Public Water Supply, MDH

Larry Gust, MDH

Jim Warner, Division Manager, Ground Water and Solid Waste Division, MPCA

Gary Eddy, Supervisor, Site Response Section, Ground Water and Solid Waste Division, MPCA

Don Jakes, Supervisor, Program Development Section, Ground Water and Solid Waste Division, MPCA

Doreen Fier-Tucker, Tanks and Spills Section, Hazardous Waste Division, MPCA

John Aho, Tanks and Spills Section, Hazardous Waste Division, MPCA

Amy Hadianis, Solid Waste Section, Ground Water and Solid Waste Division, MPCA

Getchen Sabel, Program Development Section, Ground Water and Solid Waste Division, MPCA

Dave Douglas, Site Response Section, Ground Water and Solid Waste Division, MPCA

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MEMORANDUM OF AGREEMENT

Between the

Minnesota Department of Health

and the

Minnesota Pollution Control Agency

PURPOSE

The purpose of this Memorandum of Agreement (MOA) between the Minnesota Department of Health (MDH) and the Minnesota Pollution Control Agency (MPCA) is to define the roles of each agency for:

1. Responding to contamination in private water supply wells;
2. Responding to contamination in municipal water supply wells; and
3. Establishing Special Well Construction Areas.

Surface water drinking water supplies are excluded from this MOA

The agencies agree as follows:

I. AGENCY RESPONSIBILITIES

For purposes of this MOA, the MDH is the primary state agency responsible for conducting assessments of human health risks related to the drinking of contaminated ground water. The MDH is the only state agency responsible for issuing drinking water well advisories ("well advisories") to owners or operators of private drinking water wells ("private wells") and public drinking water wells ("public wells") which have been determined to present unacceptable risks to human health. The MDH is the only state agency responsible for establishing special well construction areas for geographic areas of the state where ground water quality poses a threat to public health.

The MPCA is empowered by the Minnesota Environmental Response and Liability Act (MERLA) and the Petroleum Release Cleanup Act (PRCA) to respond to well advisories. These responses may include investigating the magnitude and extent of the ground water contamination, requesting responsible parties to provide safe, alternative short- and long-term drinking water sources to affected owner(s) or operator(s), declaring emergencies under MERLA or PRCA for providing alternative drinking water to those with well advisories where responsible parties cannot or will not provide alternative water, and ensuring that drinking water supply aquifers are remediated to the extent practicable.

Generally, the MPCA will not declare a drinking water emergency under MERLA unless the MDH first issues a well advisory due to human consumption of contaminated ground water except for certain emergency response situations. Naturally occurring compounds, nitrates and agricultural chemicals, which exceed water quality standards are outside the scope of this MOA.

The agencies agree to work toward electronic data exchange and to transfer data by hard copy until such time as electronic data transfer capabilities exist.

II. MOA COORDINATORS

The agencies agree that there is a need for a primary contact in each agency to answer and to direct inquiries from the other agency on all issues related to coordination of activities covered by this MOA. The agencies agree to meet at least quarterly to discuss issues relevant to this MOA and to update the MOA as needed. The host agency will alternate each quarter. The agencies agree to assign a MOA Coordinator for these meetings. The MPCA MOA Coordinator is Gary Eddy, (612) 296-7758, Supervisor of Response Unit I, Site Response Section, Ground Water and Solid Waste Division. The MDH MOA Coordinator is Gary Englund, (612) 627-5133, Section Chief, Drinking Water Protection Section, Division of Environmental Health.

III. PRIVATE WELLS

The MDH Section of Environmental Health Hazards Management (EHHM) is responsible for conducting risk assessments of private wells and the issuance of well advisories to the owner(s) or operator(s) of private wells if necessary.

A. Assessing Risk

1. The MPCA staff will promptly request a risk assessment for private wells from the MDH staff when the MPCA staff becomes aware that private wells are contaminated to a level of concern. The request will be in the form of an interagency memorandum from the appropriate MPCA staff to the EHHM Section Manager.

The request for a risk assessment will contain the following: a narrative description of the problem, including a description of the aquifer(s) of concern; names, addresses, and telephone numbers (including area codes) of well owner(s) or operator(s); copies of all relevant analytical data; a map of the area of concern; name and telephone number of the MPCA staff, and a requested turnaround time for the risk assessment.

2. The MDH staff will promptly request any missing information from the MPCA staff. The MPCA staff will promptly supply any information needed by MDH staff to complete their risk assessment. The MDH staff will promptly notify the MPCA staff of an estimated time for completion of the risk assessment, typically within 10 days.

3. If the MDH staff becomes aware of a private well or wells where owner(s) or operator(s) are drinking contaminated ground water at a level of concern, the MDH will promptly inform the MPCA Spills and Emergency Response Team of the situation. The MDH staff will then proceed as described in Parts III.A.1. and III.A.2. The MPCA will assign a site team as appropriate.

B. Issuing Well Advisories and Follow-up

1. The MDH staff will immediately issue a letter to the affected owner(s) or operator(s), with signed copies of the letter to the appropriate MPCA staff. The letter will be a well advisory or a negative declaration, accompanied by the reasons for the advisory or the negative declaration if requested by the MPCA. The MDH staff will inform the MPCA staff prior to the issuance of the letter with a copy to the MPCA staff.
2. The MDH and MPCA staff will work together to plan and attend all necessary public meetings resulting from the issuance of well advisories. Both staffs will work together to prepare fact sheets and to participate in other community relation activities.

C. Reassessing Risk

The agencies agree to follow the above process whenever it appears that the risk assessment should be re-evaluated. Reassessing risk may be necessary, for example, when risk assessment criteria change.

D. Rescinding Well Advisories

The agencies agree to follow the above process when rescinding a well advisory. A well advisory may be rescinded when the criteria listed in Part III.F are no longer exceeded. Only the MDH can rescind a well advisory and only after consultation with the MPCA staff. The MPCA staff will be notified in writing when a well advisory is rescinded.

E. Sampling and Analysis

1. In general, the MDH will issue well advisories to private well owner(s) or operator(s) with one confirming round of samples when the results indicate a reproducible, validated pattern of contamination. The MPCA staff will be the primary contact for the well owner(s) or operator(s). If additional health effect information is needed, the MPCA staff may refer well owner(s) or operator(s) to MDH staff.
2. The field sampling methods used to sample well water must be approved by MPCA staff.

3. The analytical methods used to analyze well water must be U.S. Environmental Protection Agency or equivalent methods, as determined by the MPCA staff.
4. The MPCA staff will review the quality of all analytical data submitted to the MDH, including the field sampling and analytical methods.

F. Criteria for MDH Issuing Well Advisories

1. Exceeding One or More Health Risk Limit. Well advisories will be issued when well water contains one or more contaminants which exceed the respective Health Risk Limit (HRL) as established by the Minn. Rules pts. 4717.7100 to 4717.7800.
2. Exceeding Additivity. The use of additivity as a well advisory criteria may be necessary when two or more contaminants are found in a residential well but their individual concentrations are below their respective HRLs. Additivity calculations will be made for carcinogens and for systemic toxicants with similar toxic endpoints, as provided in the Health Risk Limits rules.
3. General Concern for the Public Health. There may be site-specific circumstances where well advisories are appropriate to protect against imminent and unknown health risks. Examples include but are not limited to the following: an assessment that a ground water contaminant plume which exceeds any of the above two criteria will impact residential wells in the immediate future or the presence of a contaminant of unknown toxicological potential. Well advisories may be issued on a case-by-case basis under these circumstances.

G. Multiple Contaminants Below Well Advisory Criteria

Well advisories will not be issued solely on the basis of multiple contaminants that do not equal or exceed the threshold criteria described in Part III.F.3. The presence of multiple contaminants below well advisory criteria in private wells will cause the MPCA to consider broadening the analytical scan of the contaminated water from the affected wells. Should a broader analytical scan indicate that the criteria in Part III.F.3. have not been exceeded, a well advisory will not be issued.

H. Request for Additional HRLs or Health-Based Values

If a contaminant that has no HRL or health-based value is detected in the ground water, the MPCA staff will request that the MDH staff develop a health-based value for that contaminant. The request will be in the form of an interagency memorandum from the MPCA staff to the EHHM Section Manager.

The memorandum will contain the following: a narrative description of the problem, including a description of the aquifer of concern and the name and CAS # of the contaminant(s); the name, address, and telephone number (including area code) of the well owner or operator; copies of all relevant analytical data; a map of the area of concern; name and telephone number of the MPCA staff; and a requested turnaround time for development of the health-based value.

If the MDH staff will not be able to accommodate the requested time frame, they will promptly notify the MPCA staff of an alternative projected time for completion of the task.

The MDH staff will transmit the requested health-based value(s) and any other pertinent information in the form of an interagency memorandum from the MDH staff to the MPCA staff. The memorandum will include the results of a risk assessment, based on a comparison of the detected concentration with the new health-based value. If a well advisory is warranted, the MDH staff will follow the procedures outlined in Part III.B of this MOA.

The health-based values found in Attachment I to this MOA may be used by MPCA staff to supplement the HRLs, until further notice from the EHHM Section Manager to the MPCA Ground Water Data Manager. Attachment I is appended to and made a part of this MOA.

When a chemical listed on Attachment I occurs at a well along with other chemicals which have HRLs or MDH health-based values, the MPCA and MDH will include that chemical into their determination of overall risk for a mixture, using the procedures given in Minn. Rules pts. 4717.7700 - 7750.

I. Updating Well Advisory Criteria

When the MDH updates well advisory criteria in Part III.F, the MPCA MOA Coordinator will be immediately notified and this MOA will be updated to reflect these changes within 30 days.

J. Well Advisory Criteria as Superfund Clean-up Criteria

When the MPCA considers the well advisory criteria reasonable and necessary to protect public health, the criteria may be used as state clean-up criteria.

The use of well advisory criteria as clean-up criteria is solely the responsibility of the MPCA.

IV. PUBLIC WELLS

The MDH Section of Drinking Water Protection (DWP) is solely responsible for enforcement of the Safe Drinking Water Act (SDWA) provisions pertaining to public wells. The use of a Maximum Contaminant Levels (MCL) as a clean-up criteria is at the discretion of the MPCA staff.

Pursuant to the SDWA, the MDH DWP staff is responsible for the collection and evaluation of data related to the quality of ground water pumped from public wells and distributed as drinking water. Certain programs within the MPCA need some of this data.

A. Information Requests by MPCA

1. When the MPCA staff wishes to obtain ground water data for a particular public well(s), a request will be made in the form of an interagency memorandum from the appropriate MPCA staff in consultation with the MPCA Ground Water Data Manager to the DWP Section Manager.

All requests will contain the following: a description of the public well(s); unique well number; chemical parameters of interest; period of record; name and telephone number of the MPCA staff; and a requested turnaround time for the response.

2. The MDH staff will promptly request any missing information from the MPCA staff. The MPCA staff will promptly supply any information needed by MDH staff to fulfill the request. The MDH staff will identify to the MPCA staff an estimated time for completion of the task, typically in 10 days.
3. The MDH response will include all laboratory results, public notifications, enforcement actions taken, and measures taken to comply with the appropriate MCL(s).

B. Routine Data Transfer

1. Community and Nontransient Noncommunity Wells

The MDH and MPCA agree to the following procedure for routine data transfer. For community (municipalities, mobile home parks, etc.) and nontransient noncommunity (schools, factories, etc.) wells with MCL exceedances information collected by the MDH will be transmitted to the MPCA Spills and Emergency Response Team. This information may include laboratory results, public notifications, enforcement actions, and measures taken to comply with the appropriate MCL(s).

MDH will routinely transmit copies of analytical results and accompanying correspondence to the MPCA Ground Water Data Manager for monitoring of synthetic organic chemicals (SOCs) and volatile organic chemicals (VOCs) that exceed detection levels which trigger more frequent monitoring by MDH. SOC and VOC analytical results which do not exceed detection levels and results of naturally occurring contaminants will not be routinely transmitted to MPCA. Additional data that does not fall into the above procedure may be requested on a case-by-case basis.

2. Transient Noncommunity Water Supplies.

Transient noncommunity water supplies (restaurants, gas stations, churches, etc.) are regulated for only three contaminants: coliform bacteria, nitrates, and nitrites. If MPCA initiated monitoring for contaminants other than coliform bacteria, nitrates, and nitrites at transient noncommunity water supplies indicates contamination of the drinking water, then the same procedure outlined in the "Private Well" section of this agreement will be followed. The only difference will be that monitoring data from transient noncommunity water supplies will be sent to the DWP Section and drinking water advisories will be issued by the DWP Section.

3. Enforcement.

When MCL exceedances warrant enforcement action in order to provide an alternative, safe, long-term water supply to the public, MDH agrees to initiate the enforcement action pursuant to the SDWA. MDH's enforcement action will require the water supplier to take corrective actions that will result in a safe, long-term water supply. The agencies agree to coordinate these enforcement actions. Pursuant to MERLA and/or PRCA, MPCA may pursue enforcement against MERLA and/or PRCA responsible parties. At its discretion, MPCA may use its authority pursuant to MERLA to spend state Superfund money or pursuant to PRCA to spend Petrofund money for corrective actions that will result in a safe, long-term water supply and seek cost recovery, if necessary.

V. **SPECIAL WELL CONSTRUCTION AREAS**

MDH staff from the Section of DWP is solely responsible for establishing and enforcing special well construction areas. The MDH can establish a special well construction area independently of a request from the MPCA; however, when the MPCA initiates such a request, the procedures outlined below will apply.

If the MDH establishes a special well construction area independently of a request from the MPCA, the MDH will provide a copy of the public notice to the MPCA Ground Water Data Manager.

A. Requesting a Special Well Construction Area

1. The MPCA may request that MDH designate a special well construction area, based on the criteria identified in Part V.C of this Agreement.

The request will be in the form of an interagency memorandum from the MPCA staff to the DWP Section Manager. The memorandum will include a map of the area of concern showing contaminant distribution; a narrative of the problem; a brief description of the hydrogeologic and ground-water quality conditions; information on land use/development patterns (if known or relevant); well construction practices; summary table(s) of all relevant data, including the names, addresses, and telephone numbers (including area codes) of owner(s) or operator(s) and/or municipalities whose ground water supply has, thus far, been impacted by the contaminant plume(s); the name and telephone number of the MPCA staff and a requested turnaround time for a determination as to whether an area advisory will be established, typically 10 days.

2. The MDH staff will promptly request any additional information from the MPCA staff and will identify an estimated time for making the determination regarding whether an area advisory will be established. The MPCA staff will promptly supply, typically 10 days, any additional information requested by the MDH.
3. The MDH will respond to the request for an area advisory in the form of an interagency memorandum from the DWP Section Manager to the appropriate MPCA staff, with a copy to the MPCA Ground Water Data Manager. If MDH determines that a special well construction area is warranted, then the response memorandum will include an estimated schedule for establishing such an area.

B. Establishing a Special Well Construction Area

1. The MDH and MPCA staff will work together to resolve the technical issues associated with establishing a special well construction area.
2. Both agencies recognize the importance of educating the affected community about the ground water contamination and the reasons why a special well construction area is necessary. The MDH and MPCA staff will work together to plan and attend all necessary public meetings resulting from the creation of a special well construction area. These efforts may include the preparation of fact sheets and other community relation activities.
3. The MDH will send a written notice to drilling contractors; affected property owners if practical; local governmental officials; and other interested parties when a special well construction area is established. A copy of the notice will be sent to the MPCA staff for review prior to the public notice. The notice will contain a map showing the boundary

of the special well construction area, a description of the problem, the rationale for establishing the special well construction area, and the specific restrictions imposed by the special well construction area.

C. Criteria for a Special Well Construction Area

1. The MDH may issue a special well construction area based on the following criteria:
 - a. Exceedances of HRLs, MCLs or other health-based values;
 - b. Contaminant plume is well-defined;
 - c. Hydrogeology is well-defined;
 - d. Water use patterns are known; and
 - e. Involves an area of one square mile or greater and five or more wells.
2. It must be documented that the ground water contamination poses a risk to public health. Examples of such circumstances include an area in which several well advisories have been issued for water supply wells downgradient of a contaminant source, or an area in which a contaminant plume threatens to impact downgradient water supply wells to such an extent that they may become nonpotable.
3. A special well construction area will only be established if the contaminant plume is present in an area where there has been or is expected to be use of ground water resources.

D. Institutional Controls

The MDH is responsible for determining the specific requirements that will apply within each area advisory. Such requirements will be developed on a case-by-case basis and in consultation with the MPCA. Examples of such requirements include, but are not limited to, the following:

1. Restrictions on the drilling of new water supply wells or the modification of existing wells;
2. Special well construction requirements;
3. Special water quality testing requirements; and
4. Mandatory sealing of existing water supply wells;

E. Revising or Rescinding an Area Advisory

1. Only the MDH can rescind an area advisory or change the boundaries and/or institutional controls associated with such an area. Any such action will be made in consultation with the appropriate MPCA staff.
2. Circumstances which may lead to revising or rescinding an area advisory include, but are not limited to, a change in the risk assessment criteria; additional hydrogeologic or ground water quality data; or successful implementation of corrective action.

F. Establishing a Work Group

The MPCA and MDH agree to establish a work group to review special well construction area policies and procedures.

VI. **WELLS AND BORINGS**

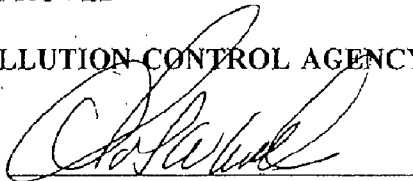
All ground water monitoring data submitted to the MPCA shall be accompanied by a Unique Well Number for each monitoring well sampled or a Well and Boring Sealing Record Number for each temporary monitoring well (i.e., Geoprobe, Hydropunch, Screened Auger, etc.) sampled. The data is unacceptable unless the identification numbers are provided.

MPCA staff agrees to notify MDH staff when MPCA staff discover environmental bore holes, monitoring wells, or remedial wells not meeting the requirements of Minn. Rules ch. 4725.

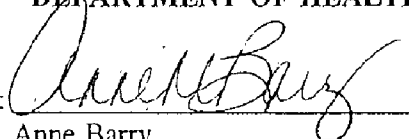
IN WITNESS WHEREOF, the parties to this agreement have executed this agreement intending to be bound by it:

APPROVED

POLLUTION CONTROL AGENCY

By: 
Charles W. Williams
Commissioner

DEPARTMENT OF HEALTH

By: 
Anne Barry
Acting Commissioner

Date: 3/10/95

Date: 2/24/95

DEPARTMENT : Health

STATE OF MINNESOTA
Office Memorandum

DATE : February 16, 1995

TO : Don Jakes
Groundwater Unit, Program Development Section
Minnesota Pollution Control AgencyFROM : Deborah W. Petersen, Ph.D. *DWP/lg*
Health Risk Assessment Unit

PHONE : 627-5058

SUBJECT : Chemicals for MOA

RECEIVED
MPCA Information Center
of pieces *1*

MAR 02 1995

This is in response to MPCA's request for health-based values for a list of chemicals we received October 11, 1994, for inclusion in the MOA. Please note the changes from my January 23, 1995, memo.

Time in a.m. p.m. by [Signature] DSN

Chemical	CAS Number	Endpoint	Value	Source
acetonitrile	75-05-8	hematological, liver	40 ug/L	IRIS
molybdenum	7439-98-7	kidney	30 ug/L	IRIS
cyanazine	21725-46-2	cancer	0.4 ug/L	HEAST'94
terbufos	13071-79-9	neurological	0.2 ug/L	HEAST'94
diallate	2303-16-4	cancer	6 ug/L	HEAST'94
phorate	298-02-2	neurological	1 ug/L	HEAST'94
PAHs *	none	cancer	0.05 ug/L	IRIS
copper **	7440-50-8	none	1000 ug/L	IRIS
tetrahydrofuran	109-99-9	none	100 ug/L	DRAFT ADI

* For total carcinogenic PAHs, value is based on the benzo[a]pyrene cancer potency slope.

** This value is a Secondary MCL which EPA's IRIS file states is health-protective.

Lead: EPA IRIS file states it is "inappropriate" to do a risk assessment at this time.

Mercury: MDH will not do a risk assessment at this time.

1-methyl phenol: No information available.

2-methyl phenol, dicamba and 4-methylphenol already have HRLs.

DWP/ilm

MEMORANDUM OF AGREEMENT

Between the

Minnesota Department of Health

And the

Minnesota Pollution Control Agency

PURPOSE

The purpose of this Memorandum of Agreement (MOA) between the Minnesota Department of Health (MDH) and the Minnesota Pollution Control Agency (MPCA) is to define the roles of each agency for:

1. Responding to contamination in private water supply wells;
2. Responding to contamination in public water supplies;
3. Establishing Special Well Construction Areas; and
4. Requesting and establishing Health Based Values (HBV).

The agencies agree as follows:

I. AGENCY RESPONSIBILITIES

For purposes of this MOA, the MDH is the primary state agency responsible for conducting assessments of human health risks related to the drinking of contaminated water. The MDH is the only state agency responsible for issuing drinking water well advisories ("well advisories") to owners or operators of private drinking water wells ("private wells") and public drinking water supplies which have been determined to present unacceptable risks to human health. The MDH is the only state agency responsible for establishing special well construction areas for geographic areas of the state where ground water quality poses a threat to public health.

The MPCA is empowered by the Minnesota Environmental Response and Liability Act (MERLA) and the Petroleum Release Cleanup Act (PRCA) to respond to well advisories. These responses may include investigating the magnitude and extent of the ground water contamination; requesting responsible parties to provide safe, alternative short- and long-term drinking water sources to affected owner(s) or operator(s); declaring emergencies under MERLA or PRCA for providing alternative drinking water to those with well advisories where responsible parties cannot or will not provide alternative water; and ensuring that drinking water supply aquifers are remediated to the extent practicable.

MEMORANDUM OF AGREEMENT

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Generally, the MPCA will not declare a drinking water emergency under MERLA unless the MDH first issues a well advisory due to human consumption of contaminated ground water except for certain emergency response situations. Naturally occurring compounds, nitrates, and agricultural chemicals that exceed water quality standards are outside the scope of this MOA.

The agencies agree to transfer data electronically or to transfer data by hard copy until such time as electronic data transfer capabilities exist.

II. MOA COORDINATORS

The agencies agree that there is a need for a primary contact in each agency to answer and to direct inquiries from the other agency on all issues related to coordination of activities covered by this MOA. The agencies agree to meet at least yearly to discuss issues relevant to this MOA and to update the MOA as needed. The host agency will alternate. The agencies agree to assign a MOA Coordinator. The MPCA MOA Coordinator is Mark Schmitt (651) 296-8574, Interim Section Chief/Regular Facilities and Site Remediation Section, Policy and Planning Division. The MDH MOA Coordinator is Larry Gust (651) 215-0921, Health Risk Assessment (HRA) Unit Supervisor, Environmental Surveillance and Assessment Section (ESA), Division of Environmental Health. If it is necessary to establish a new coordinator, it will be done by memorandum, which would amend the MOA until such time as the MOA is updated.

III. PRIVATE WELLS

The MDH-ESA Section is responsible for conducting risk assessments of private wells and the issuance of well advisories to the owner(s) or operator(s) of private wells if necessary.

A. Assessing Risk

1. The MPCA staff will promptly request a risk assessment for private wells from the MDH staff when the MPCA staff becomes aware that private wells are contaminated to a level of concern. The request will be in the form of an interagency memorandum from the appropriate MPCA staff to the HRA Unit Supervisor. The request for a risk assessment will contain the following: a narrative description of the problem, including a description of the aquifer(s) of concern; names, addresses, and telephone numbers (including area codes) of well owner(s) or operator(s); copies of all relevant analytical data; a map of the area of concern; name and telephone number of the MPCA staff; and a requested turnaround time for the risk assessment.

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2. The MDH staff will promptly request any missing information from the MPCA staff. The MPCA staff will promptly supply any information needed by MDH staff to complete their risk assessment. The MDH staff will promptly notify the MPCA staff of an estimated time for completion of the risk assessment, typically within 10 days.
3. If the MDH staff becomes aware of a private well or wells where owner(s) or operator(s) are drinking contaminated ground water at a level of concern, the MDH will promptly inform the MPCA Spills and Emergency Response Team of the situation. The MDH staff will then proceed as described in Parts III.A.1. and III.A.2. The MPCA will assign a site team as appropriate.

B. Issuing Well Advisories and Follow-up

1. The MDH staff will immediately issue a letter to the affected owner(s) or operator(s), with signed copies of the letter to the appropriate MPCA staff. The letter will be a well advisory or a negative declaration, accompanied by the reasons for the advisory or the negative declaration if requested by the MPCA. The MDH staff will inform the MPCA staff prior to the issuance of the letter with a copy to the MPCA staff.
2. The MDH and MPCA staff will work together to plan and attend all necessary public meetings resulting from the issuance of well advisories. Both staffs will work together to prepare fact sheets and to participate in other community relation activities.

C. Reassessing Risk

The agencies agree to follow the above process whenever it appears that the risk assessment should be re-evaluated. Reassessing risk may be necessary, for example, when risk assessment criteria change.

D. Rescinding Well Advisories

The agencies agree to follow the above process when rescinding a well advisory. A well advisory may be rescinded when the criteria listed in Part III.F. is no longer exceeded. Only the MDH can rescind a well advisory and only after consultation with the MPCA staff. The MPCA staff will be notified in writing when a well advisory is rescinded.

MEMORANDUM OF AGREEMENT

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E. Sampling and Analysis

1. In general, the MDH will issue well advisories to private well owner(s) or operator(s) with one confirming round of samples when the results indicate a reproducible, validated pattern of contamination. The MPCA staff will be the primary contact for the well owner(s) or operator(s). If additional health effect information is needed, the MPCA staff may refer well owner(s) or operator(s) to MDH staff.
2. The field sampling methods used to sample well water must be approved by MPCA staff.
3. The analytical methods used to analyze well water must be U.S. Environmental Protection Agency or equivalent methods, as determined by the MPCA staff.
4. The MPCA staff will review the quality of all analytical data submitted to the MDH, including the field sampling and analytical methods.

F. Criteria for MDH Issuing Well Advisories

1. Exceeding One or More Health Risk Limit. Well advisories will be issued when well water contains one or more contaminants that exceed the respective Health Risk Limit (HRL) as established by the Minn. R. pts. 4717.7100 to 4717.7800.
2. Exceeding Additivity. The use of additivity as a well advisory criterion may be necessary when two or more contaminants are found in a residential well but their individual concentrations are below their respective HRLs. Additivity calculations will be made for carcinogens and for systemic toxicants with similar toxic endpoints, as provided in the Health Risk Limits rules.
3. General Concern for the Public Health. There may be site-specific circumstances where well advisories are appropriate to protect against imminent and unknown health risks. Examples include but are not limited to the following: an assessment that a ground water contaminant plume which exceeds any of the above two criteria will impact residential wells in the immediate future or the presence of a contaminant of unknown toxicological potential. Well advisories may be issued on a case-by-case basis under these circumstances.

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G. Multiple Contaminants Below Well Advisory Criteria

Well advisories will not be issued solely on the basis of multiple contaminants that do not equal or exceed the threshold criteria described in Part III.F.3. The presence of multiple contaminants below well advisory criteria in private wells will cause the MPCA to consider broadening the analytical scan of the contaminated water from the affected wells. Should a broader analytical scan indicate that the criteria in Part III.F.3. has not been exceeded, a well advisory will not be issued.

H. Request for Additional HBVs

If a contaminant that has no HRL or HBV is detected in the ground water, or if the MPCA otherwise has a need for a new HBV, the MPCA MOA Coordinator will request through the MDH MOA Coordinator that MDH staff develop a HBV for the contaminant(s). The request(s) will be in the form of an interagency memorandum from the MPCA Coordinator to the MDH Coordinator. The coordinators will agree on the priority of each request relative to other existing requests made by the MPCA; the priority can be prearranged and included in the original request or it can be agreed on after the request and properly documented. The coordinators are responsible for establishing distribution lists with their respective departments to keep staff informed of the requests, work results, and technical information generated by the cooperative efforts. The memorandum will contain the following: a narrative description of the problem, including a description of the aquifer of concern and the name and Chemical Abstracts Society Registry Number (CAS RN) of the contaminant(s); the name, address, and telephone number (including area code) of the well owner or operator; copies of all relevant analytical data; a map of the area of concern; name and telephone number of the MPCA staff; and a requested turnaround time for development of the health-based value.

If the MDH staff will not be able to accommodate the requested time frame, they will promptly notify the MPCA staff of an alternate projected time for completion of the task.

The MDH staff will transmit the requested health-based value(s) and any other pertinent information in the form of an interagency memorandum from the MDH staff to the MPCA staff. The memorandum will include the results of a risk assessment, based on a comparison of the detected concentration with the new health-based value. If a well advisory is warranted, the MDH staff will follow the procedures outlined in Part III.B. of this MOA.

The health-based values found in Attachment I to this MOA may be used by MPCA staff to supplement the HRLs until further notice from the HRA Unit Supervisor to the MPCA MOA Coordinator. Attachment I is appended to and a part of this MOA.

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When a chemical listed on Attachment I occurs at a well along with other chemicals which have HRLs or MDH health-based values, the MPCA and MDH will include that chemical into their determination of overall risk for a mixture, using the procedures given in Minn. R. pts. 4717.7700 - 7750.

I. Updating Well Advisory Criteria

When the MDH updates well advisory criteria in Part III.F, the MPCA MOA Coordinator will be immediately notified and this MOA will be updated to reflect these changes within 30 days.

J. Well Advisory Criteria as Superfund Clean-up Levels and Remediation Requirements

When the MPCA considers the well advisory criteria reasonable and necessary to protect public health, the criteria may be used as state clean-up levels and remediation requirements.

The use of well advisory criteria as clean-up levels and remediation requirements is solely the responsibility of the MPCA.

IV. PUBLIC WATER SUPPLIES

The MDH Section of Drinking Water Protection (DWP) is solely responsible for enforcement of the Safe Drinking Water Act (SDWA) provisions pertaining to public water supplies. The use of Maximum Contaminant Level (MCL) as a clean-up level or remediation requirement is at the discretion of the MPCA staff.

Pursuant to the SDWA, the MDH DWP staff is responsible for the collection and evaluation of data related to the quality of drinking water from public water supplies.

Certain programs within the MPCA need some of this data.

A. Information Requests by MPCA

1. When the MPCA staff wishes to obtain water supply data for a particular public water supply, a request will be made in the form of an interagency memorandum from the appropriate MPCA staff to the DWP Section Manager.

All requests will contain the following: a description of the public water supply; unique well number; chemical parameters of interest; period of record; name and telephone number of the MPCA staff; and a requested turnaround time for the response.

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2. The MDH staff will promptly request any missing information from the MPCA staff. The MPCA staff will promptly supply any information needed by MDH staff to fulfill the request. The MDH staff will identify to the MPCA staff an estimated time for completion of the task, typically in 10 days.
3. The MDH response will include all laboratory results, public notifications, enforcement actions taken, and measures taken to comply with the appropriate MCL(s).

B. Routine Data Transfer

1. Community and Nontransient Noncommunity Water Supplies

The MDH and MPCA agree to the following procedure for routine data transfer. For community (municipalities, mobile home parks, etc.) and nontransient noncommunity (schools, factories, etc.) water supplies with MCL exceedances information collected by MDH will be transmitted to the MPCA Emergency Response Team. This information may include laboratory results, public notifications, enforcement actions, and measures taken to comply with the appropriate MCL(s).

MDH will routinely transmit analytical results and accompanying correspondence to the appropriate MPCA Site Remediation Section Supervisor for monitoring of synthetic organic chemicals (SOCs) and volatile organic chemicals (VOCs) that exceed detection levels which trigger more frequent monitoring by MDH. SOC and VOC analytical results that do not exceed detection levels and results of naturally occurring contaminants will not be routinely transmitted to MPCA. Additional data that does not fall into the above procedure may be requested on a case-by-case basis.

2. Transient Noncommunity Water Supplies

Transient noncommunity water supplies (restaurants, gas stations, churches, etc.) are regulated for only three contaminants: coliform bacteria, nitrates, and nitrites. If MPCA-initiated monitoring for other contaminants at a transient noncommunity water supply indicates contamination of the drinking water, then the same procedure outlined in Part III of this agreement will be followed. The only difference will be that monitoring data from transient noncommunity water supplies will be sent to the DWP Section and the DWP Section will issue drinking water advisories.

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3. Enforcement

When MCL exceedances warrant enforcement action in order to provide an alternative, safe, long-term water supply to the public, MDH agrees to initiate the enforcement action pursuant to the SDWA. MDH's enforcement action will require the water supplier to take corrective actions that will result in a safe, long-term water supply. The agencies agree to coordinate these enforcement actions. Pursuant to MERLA and/or PRCA, MPCA may pursue enforcement against MERLA and/or PRCA responsible parties. At its discretion, MPCA may use its authority pursuant to MERLA to spend state Superfund money or pursuant to PRCA to spend Petrofund money for corrective actions that will result in a safe, long-term water supply and seek cost recovery, if necessary.

V. SPECIAL WELL CONSTRUCTION AREAS

MDH staff from the section of Well Management (WM) is solely responsible for establishing and enforcing special well construction areas. The MDH can establish a special well construction area independently of a request from the MPCA; however, when the MPCA initiates such a request, the procedures outlined below will apply.

If the MDH establishes a special well construction area independently of a request from the MPCA, the MDH will provide a copy of the public notice to the MPCA MOA Coordinator.

A. Requesting a Special Well Construction Area

1. The MPCA may request that MDH designate a special well construction area, based on the criteria identified in Part V.C. of this Agreement.

The request will be in the form of an interagency memorandum from the MPCA staff to the WM Section Manager. The memorandum will include a map of the area of concern showing contaminant distribution; a narrative of the problem; a brief description of the hydrogeologic and ground water quality conditions; information on land use/development patterns (if known or relevant); well construction practices; summary table(s) of all relevant data, including the names, addresses, and telephone numbers (including area codes) of owner(s) or operator(s) and/or municipalities whose ground water supply has, thus far, been impacted by the contaminant plume(s); the name and telephone number of the MPCA staff, and a requested turnaround time for a determination as to whether an area advisory will be established, typically 10 days.

MEMORANDUM OF AGREEMENT

Page 9

2. The MDA staff will promptly request any additional information from the MPCA staff and will identify an estimated time for making the determination regarding whether an area advisory will be established. The MPCA staff will promptly supply any additional information requested by the MDH, typically within 10 days.

3. The MDH will respond to the request for an area advisory in the form of an interagency memorandum from the WM Section Manager to the appropriate MPCA staff, with a copy to the MPCA MOA Coordinator. If MDH determines that a special well construction is warranted, then the response memorandum will include an estimated schedule for establishing such an area.

B. Establishing a Special Well Construction Area

1. The MDH and MPCA staff will work together to resolve the technical issues associated with establishing a special well construction area.

2. Both agencies recognize the importance of educating the affected community about the ground water contamination and the reasons why a special well construction area is necessary. The MDH and MPCA staff will work together to plan and attend all necessary public meetings resulting from the creation of a special well construction area. These efforts may include the preparation of fact sheets and other community relation activities.

3. The MDH will send a written notice to drilling contractors, affected property owners if practical, local governmental officials, and other interested parties when a special well construction area is established. A copy of the notice will be sent to the MPCA staff for review prior to the public notice. The notice will contain a map showing the boundary of the special well construction area, a description of the problem, the rationale for establishing the special well construction area, and the specific restrictions imposed by the special well construction area.

C. Criteria for a Special Well Construction Area

1. The MDH may issue a special well construction area based on the following criteria:

- a. Exceedances of HRLs, MCLs, or other health-based values;
- b. Contaminant plume is well defined;
- c. Hydrogeology is well defined;
- d. Water use patterns are known; and
- e. Involves an area of one square mile or greater and five or more wells.

MEMORANDUM OF AGREEMENT

Page 10

2. It must be documented that the ground water contamination poses a risk to public health. Examples of such circumstances include an area in which several well advisories have been issued for water supply wells downgradient of a contaminant source, or an area in which a contaminant plume threatens to impact downgradient water supply wells to such an extent that they may become nonpotable.
3. A special well construction area will only be established if the contaminant plume is present where ground water use is expected.

D. Institutional Controls

The MDH is responsible for determining the specific requirements that will apply within each area advisory. Such requirements will be developed on a case-by-case basis and in consultation with the MPCA. Examples of such requirements include, but are not limited to, the following:

1. Restrictions on the drilling of new water supply wells or the modification of existing wells;
2. Special well construction requirements;
3. Special water quality testing requirements; and
4. Mandatory sealing of existing water supply wells.

E. Revising or Rescinding an Area Advisory

1. Only the MDH can rescind an area advisory or change the boundaries and/or institutional controls associated with such an area. Any such action will be made in consultation with the appropriate MPCA staff.
2. Circumstances which may lead to revising or rescinding an area advisory include, but are not limited to, a change in the risk assessment criteria; additional hydrogeologic or ground water quality data; or successful implementation of corrective action.

F. Establishing a Work Group

The MPCA and MDH agree to establish a work group to review special well construction area policies and procedures.

Site Identification Number UP 3010

NOTICE

This file contains one or more of the following items that have not been scanned.
For access to these items, see the original file.

- ☐ audio cassette tape(s)
- ☐ blueprint(s)
- ☐ compact disc(s)
- ☐ diskette(s)
- ☐ map(s)
- ☒ other Poor Quality X3
- ☐ photograph(s)
- ☐ plan sheet(s)
- ☐ slide(s)
- ☐ videotape(s)

MEMORANDUM OF AGREEMENT

Page 14

IV. WELLS AND BORINGS

All ground water monitoring data submitted to the MPCA shall be accompanied by a Unique Well Number for each monitoring well sampled or a Well and Boring Sealing Record Number for each temporary monitoring well (e.g., Geoprobe, Hydropunch, Screened Auger, etc.) sampled. The data is unacceptable unless the identification numbers are provided.

MPCA staff agrees to notify MDH staff when MPCA staff discovers environmental boreholes, monitoring wells, or remedial wells not meeting the requirements of Minn. R. ch. 4725.

IN WITNESS WHEREOF, the parties to this agreement have executed this agreement intending to be bound by it.

APPROVED BY:

POLLUTION CONTROL AGENCY

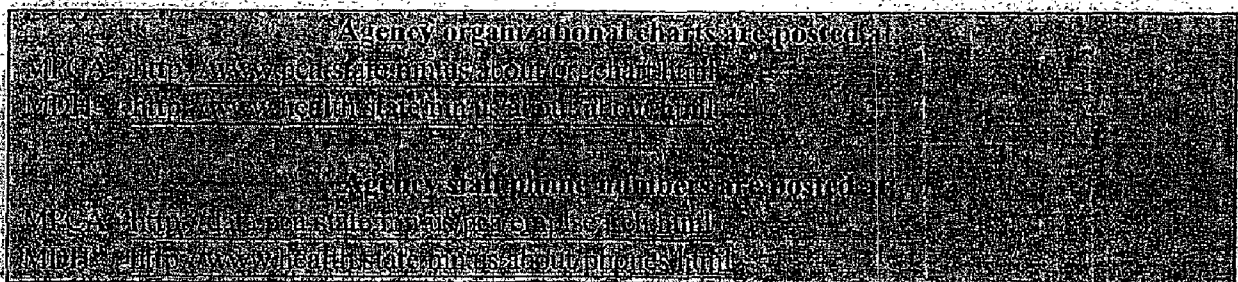
DEPARTMENT OF HEALTH

By: Karen A. Studders
Karen A. Studders
Commissioner

By: Jan Malcolm
Jan Malcolm
Commissioner

Date: 15 Sept 2007

Date: 10/10/02





Health-Based Values for Groundwater

Many contaminants found in groundwater do not have federal standards or Minnesota Department of Health (MDH) derived Health Risk Limits (HRLs). Health-based values (HBVs) are developed by the MDH for chemicals that have been detected in groundwater and have adequate toxicological data but were not included in the HRL rule. HBVs are developed by the same methodology and have the same meaning as HRLs; however, HBVs are not promulgated under rule and have not undergone external peer review.

A health-based value (HBV) is the concentration of a groundwater contaminant, or a mixture of contaminants that can be safely consumed daily for a lifetime. A health-based value is expressed as a concentration in micrograms per liter, or calculated as a "hazard index."

HBVs are developed by the MDH upon request on a site-specific basis, whereas HRLs were developed as directed by the 1989 Minnesota Groundwater Protection Act. Development of HBVs enables timely responses to situations where no other number is available. The MDH uses U.S. Environmental Protection Agency health risk assessment data and methods to generate HBVs for groundwater contaminants. HBVs are used similarly to HRLs. HBVs and HRLs are not intended to be used as bright lines. Rather HBVs and HRLs are one of several tools or factors that may be considered in risk management decisions pertaining to waste sites.

There are many reasons why a chemical might have a HBV and not a HRL. Some of these reasons include: the chemical may not have been found in groundwater until after the HRL rule was established; there may be toxicological data available now that was not available at the time of the HRL rule; there may have been political objections to the number at rulemaking; or the level of uncertainty in the value may be greater than accepted in the rule. Some of the HBVs may be incorporated when the HRL rule is updated.

Minnesota Department of Health
Division of Environmental Health
121 East Seventh Place, P.O. Box 64975
St. Paul MN 55164-0975
651/215-0700
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HBVs are developed using the same scientific methods that were used to develop HRLs. Please refer to "Health Risk Limits for Groundwater," February 1996, MDH, for detailed information on these methods or for examples of the intended use of these values.

HBVs, like HRLs, reflect health effects data alone. They do not incorporate economic or technological factors such as treatment cost and treatment feasibility, as do federal drinking water standards, the Maximum Contaminant Levels (MCLs). Economic and technological factors, the protection of the environment, and the health of non-human species are considered in other groundwater protection regulations.

The Table of Health-Based Values for Groundwater and Toxicological Endpoints follows.

For further information about the health-based values or for consultation in assessing health risks from groundwater contaminants, contact the Minnesota Department of Health, Health Risk Assessment Unit at (651) 215-0880. To request this document in another format, call (651) 215-0700, TDD (651) 215-0707, or toll-free 1 (800) 627-3529.

March 1998

Minnesota Department of Health
Division of Environmental Health
121 East Seventh Place, P.O. Box 64975
St. Paul MN 55164-0975
651/215-0700
TDD 651/215-0707 or 1-800/627-3529

STATE_02339017

STUDIOHMS PAHANG

Chemical or Substance	CAS RN	HEA (mg/kg)	Toxicological Findings	Data Source	Date of Review
Acetochlor	34256-92-1	10	hematologic system, liver	IRIS	10/10/95
Acetolactate	5393-3	100	hematologic system	IRIS	2/1/99
Aldrin	309-00-2	0.02	cancer	IRIS	11/14/97
alpha-Hexachlorocyclopentadiene (alpha-HCCP)	519-14-0	0.00	cancer	IRIS	11/14/97
beta-Hexachlorocyclopentane (beta-HCC)	319-85-7	0.2	cancer	IRIS	11/14/97
Bis(2-chlorophenyl) ether	100-01-8	300	cancer, liver	IRIS	11/14/97
Bisphenol A	305-57-7	300	decreased body weight	NTP 1982	3/26/98
Butoxyl	6889-3	100		IRIS	11/14/97
Butylate	2009-41-5	300	increased liver weight	IRIS	4/19/96
Chlorobenzene (Classic)	509-93-3	100	hematologic system	IRIS	11/14/97
Chlorothalopil	1897-45-6	100	kidney	IRIS	1/22/99
Chlorobenzene	2921-88-7	100	alpha-Haas, lung, blood	IRIS	9/10/95
Chlorosulfuron (GLENN)	64902-72-3	300	decreased body weight	IRIS	11/14/97
Chlorazepate (Chlorazepam)	541-78-1	300	hepatobiliary changes	EXTOXNET	11/14/97
Cobalt	7440-48-4	30	gas, (c) disturbance	CA SDR	7/1/1995
Copper	7440-50-8	1000	cancer	IRIS	2/1/99
Cyanazine	21725-46-2	0.4	cancer	HEAST 94	2/16/95
Dialin	281-11-1	50	cancer	HEAST 94	2/16/95
4-(2,4-Dichlorophenoxy)butyric acid (2,4-DB)	94-82-5	50	hematologic system	IRIS	10/10/95
Dieldrin	605-11-4	0.002	cancer	IRIS	11/14/97
Dimethoate	60-51-5	1	brain, (c) inhibition	IRIS	4/19/96
Dibutyltin	318-98-7	40	decreased body weight	IRIS	11/14/97
Endosulfan	115-29-7	40	decreased weight, gain, kidney	IRIS	1/22/99
Ethionitrate	4220-29-1	200	weight, gain	IRIS	11/14/97
Ethionitrate	5223-58-6	300	hematologic system, liver	REPADED	1/22/99
Epoxystyrene (Styrene Epoxide)	82-72-9	10	cancer, lung, blood	IRIS	9/10/95
gamma-Hexachlorocyclohexane (gamma-HCH)	58-89-9	0.2	cancer	IRIS	11/14/97
Hexachlorocyclopentadiene (HCCP)	339-03-3	20	hepatobiliary	IRIS	11/14/97
Hexachlorocyclopentadiene	51235-04-2	200	decreased weight, gain	IRIS	12/15/96
Malathion	5889-29-1	1550	liver	NTP	5/9/97
Malathion	1241-25-5	1000	decreased AChase activity	IRIS	2/14/96
MCPBA (2-Methyl-2-chloroperoxybutyric acid)	391-85	10	hepatobiliary, (c) (c)	IRIS	11/14/97
MCPBA (2-Methyl-2-chloroperoxypropionic acid)	93-55-2	7	kidney	IRIS	4/19/96
Methoxyphenol	100-65-9	100	alpha-Haas, lung, blood	IRIS	11/14/97
Methylparathion	298-00-0	2	brain, RBC, and plasma, (c) inhibition, reduced hemoglobin	IRIS	7/1/1996
Methylphenyltin chloride (MPTC)	1621-0	100	kidney, damage	CH TOXNET	2/1/99
Methylphenyltin chloride (MPTC)	74223-61-6	2000	decreased body weight	EXTOXNET	11/14/97

Health-Based Values for Groundwater
Minnesota Department of Health
8/8/00 Page 1

Health-Based Values for Groundwater and Toxicological Endpoints

Chemical/Contaminant	CASRN	HBV (ug/L)	Toxicological Endpoint	IRIS Summary	Date of IRIS
Molybdenum	7439-98-7	17,300	decreased weight gain	IRIS	2/16/95
Nicosulfuron (Accent)	111991-09-4	9000	decreased weight gain	EXTOXNET	11/14/97
2,4-Dichlorophenoxyacetic acid	382-73-5	100	respiratory system	IRIS	7/6/93
Octahydro-1,3,5-tetranitro-1,3,5-tetrazine (HMX)	2591-41-0	300	liver	IRIS	1/17/97
Permethrin	29800-48-4	20	liver	IRIS	10/10/95
Pentachloronitrobenzene	82-69-5	20	liver	IRIS	11/14/97
Polycyclic aromatic hydrocarbons (PAHs)	200-000-0	0.05	cancer	IRIS	12/15/95
Propazine	332-05-3	20	renal/blood system	IRIS	11/14/97
Propazine	139-40-2	10	decreased weight gain	IRIS	10/10/95
Styrene (stable, nonradioactive, not 90-Sb)	100-00-0	4000	skeletal system	IRIS	10/10/95
Tetrahydrofuran	7440-24-6	4000	skeletal system	IRIS	5/10/95
Triethylamine	109-99-9	100	liver	IRIS	2/16/95
Total petroleum hydrocarbons	100-00-0	200	kidney	IRIS	10/8/99
Triethylamine	200-000-0	70	liver	IRIS	10/10/95
Triethylamine	82097-50-5	70	liver	IRIS	11/14/97
Triethylamine	56-35-9	20	immunosuppression	IRIS	1/22/99
Triethylamine	56-35-9	20	hematologic system/liver	IRIS	10/10/95
Triethylamine	1582-09-8	5	hematologic system/liver	IRIS	10/10/95

This value is a secondary MCL which EPA's IRIS states is health protective.

There is no direct evidence that these compounds are carcinogenic. However, because available data suggest that other chemicals in their respective classes are possible human carcinogens, an uncertainty factor for carcinogenicity was used to derive their IRIS values.

For polycyclic aromatic hydrocarbons (PAHs), the values are based on the benz[a]pyrene carcinogenic slope.

This value was developed using pyrene as a surrogate approach, as implemented by the Massachusetts Department of Environmental Protection, The Toxic Petroleum Hydrocarbon Criteria Working Group, and in North Carolina, and under consideration in Texas and Washington.

The Chemical Abstracts Society Registry Number (CASRN) is a unique number assigned to each substance or chemical by the American Chemical Society.

A HBV is an exposure value that utilizes a reference dose or cancer potency slope to calculate a concentration of a groundwater contaminant that can be safely consumed for a lifetime. A 70kg person with a daily drug weight intake of 20/day and a relative source contribution of chemical from drinking water of 20 percent was assumed in the calculations.

The Toxicological Endpoint indicates the organ system that is most sensitive to the contaminant. For carcinogens, the endpoint is cancer.

The Data Source indicates the source of the reference dose or cancer potency slope used in the HBV calculation.

EPA RED is the US EPA's pesticide registration publicly accessible database.

These HBVs have not undergone a formal rulemaking process and have a variable degree of uncertainty associated with them and should therefore be used with caution.

Office Memorandum

DATE: June 10, 2005

TO: Sheryl A. Corrigan
Commissioner

THRU: Tim Scherkenbach *Tin S.*
Director
Remediation Division

Michael Kanner *MK*
Manager
Superfund Section

FROM: Douglas Wetzstein *DW*
Supervisor
Superfund Section

Douglas Beckwith *DWB/DB*
Supervisor
Superfund Section

PHONE: 282-6243, 297-8564, 297-8609, 218/529-6267 (respectively)

SUBJECT: MPCA/MDH Memorandum of Agreement

This Memorandum of Agreement (MOA) is a revision of an existing document, outlining roles and responsibilities between the MPCA Remediation Division and several programs within the Minnesota Department of Health (MDH) Environmental Health Division.

Specifically, it defines procedures for coordinating MPCA and MDH responses for the following actions:

- Public water supply contamination
- Well advisories for public and private wells
- Special Well Construction Areas
- Establishment of Health Based Values
- Sharing laboratory data

Additionally, the MOA names coordinators at both agencies to facilitate communication and the transfer of work product requests in an organized, accountable manner.

If you have any questions concerning this document, please contact Douglas Wetzstein at 651-297-8609, or Doug Beckwith at 218-529-6267.

TS/MK/DW/DB:ls

Attachment

MEMORANDUM OF AGREEMENT

Between The

Minnesota Department of Health

And The

Minnesota Pollution Control Agency

June 9, 2005

I. PURPOSE

The purpose of this Memorandum of Agreement (MOA) between the Minnesota Department of Health (MDH) and the Minnesota Pollution Control Agency (MPCA) is to define the roles of each agency for:

1. Responding to well advisories issued for private water supply wells;
2. Responding to contamination in public water supplies, e.g. Maximum Contaminant Level (MCLs), Notice of Violations (NOVs) issued for Community and Non-transient Non-community water supplies, and well advisories issued for Transient Non-community Water Supplies;
3. Establishing Special Well Construction Areas;
4. Requesting and establishing Health Based Values (HBVs); and
5. Sharing laboratory data from drinking water wells that have detections of contaminants.

The agencies agree as follows:

II. AGENCY RESPONSIBILITIES

1. The MDH is the primary state agency responsible for conducting assessments of human health risks related to the drinking of contaminated water. The MDH is the only state agency responsible for determining whether or not drinking water supplies are unacceptable for human consumption. The mechanism used by the MDH to inform parties outside the MDH that a water supply is unacceptable for long-term human consumption is the drinking water well advisory or, in the case of public water supplies, the issuance of a NOV for a MCL exceedance, or water use restrictions and public notification. The MDH is the only state agency responsible for issuing (and rescinding) drinking water well advisories ("well advisories") to owners or operators of private drinking water wells ("private wells"), MCL NOVs for Community and Non-transient Non-community public water supplies, and drinking water well advisories ("well advisories"), or water use restrictions and public notification for Transient Non-community public water supplies which have been determined to present unacceptable risks to human health. The MDH is the only state agency responsible for establishing special well construction areas for geographic areas of the state where ground water quality poses a threat to public health.

2. The MPCA is empowered by the Minnesota Environmental Response and Liability Act (MERLA) and the Petroleum Tank Release Cleanup Act (PTRCA) to respond to releases of hazard substances, pollutants and contaminants as defined by MERLA and PTRCA in drinking water. These responses may include investigating the magnitude and extent of the ground water (and surface water) contamination; requesting responsible parties under MERLA and PTRCA to provide safe, alternative short and long-term drinking water sources to affected owner(s) or operator(s); declaring emergencies under MERLA or PTRCA for providing alternative drinking water to those with well advisories or MCL exceedances where responsible parties cannot or will not provide alternative water; and ensuring that drinking water supply aquifers are remediated to the extent practicable.
3. The MPCA will notify the MDH when an emergency under MERLA or PRCA is declared concerning a drinking water well.
4. Naturally occurring contaminants such as arsenic, nitrates, and naturally occurring radionuclides, or coliform bacteria, disinfection by-products, and agricultural chemicals that exceed drinking water quality standards, are outside the scope of this MOA.
5. The agencies agree to transfer water supply contaminant data electronically or to continue to transfer contaminant data by hard copy until such time as electronic data transfer capabilities exist. The agencies agree to work together to establish the ability to provide MPCA staff with access to MDH electronic data.

III. MOA COORDINATORS

The agencies agree that there is a need for a primary contact in each agency to direct inquiries from the other agency and to conduct other business on administrative issues related to coordination of activities covered by this MOA. Unless otherwise specified in the MOA, the agencies agree to meet at least annually or as needed to discuss issues relevant to this MOA and to update the MOA as needed. The host agency will alternate.

The agencies agree to assign an MOA Coordinator from each agency. The MPCA MOA Coordinator is Doug Wetzstein, (651) 297-8609, Superfund Unit 1 Supervisor. Alternate Coordinator is Doug Beckwith, (218) 529-6267, Superfund Unit 3 Supervisor; both are assigned to the Superfund Section, Remediation Division. The MDH MOA Coordinator is Larry Gust (651) 215-0921, Health Risk Assessment (HRA) Unit Supervisor, Environmental Surveillance and Assessment Section (ESA), Division of Environmental Health. If it is necessary to establish a new coordinator, it will be done by separate memorandum or by e-mail, which would amend the MOA until such time as the MOA is updated. Each MOA coordinator ("coordinators") acts as their agency's central contact for interactions pertaining to the administration of the MOA.

The MOA Coordinators are responsible for coordinating the review and maintenance of the MOA within their respective agencies. A copy of all correspondence from the MPCA to the MDH will be copied to the MPCA Coordinator. This information will be used at the annual stakeholder meetings between the agencies.

The MOA serves several programs within each agency; and authorities and contacts vary by program. Listed in Attachment 1 are program specific contacts and a brief description of each program's responsibility pertaining to the MOA. Program specific inquiries and requests should go directly from supervisor to supervisor to the appropriate program contact and copies to the MPCA MOA Coordinator.

IV. PRIVATE DRINKING WATER SUPPLIES (and certain public water supplies).

The MDH ESA Section is solely responsible for evaluating human risks related to the consumption of drinking water and determining whether or not well advisories are necessary.

A. Assessing Risk

1. For private wells that the MPCA has discovered to be contaminated at levels that could be unsafe, the MPCA will promptly send the data to the MDH. MDH will evaluate the data promptly. The request will be in the form of an interagency memorandum from the MPCA Supervisor to the HRA Unit Supervisor and the MPCA MOA Coordinator will be copied.
2. The data that MPCA sends to MDH will contain the following: a narrative description of the problem, including a description of the aquifer(s) of concern; names, addresses, and telephone numbers (including area codes) of well owner(s) or operator(s); copies of all relevant analytical data; a map of the area of concern; and name and telephone number of the MPCA staff assigned to the MPCA site that generated the data.
3. The MDH will promptly request any missing information from IV. A. 2. from the MPCA. The MPCA will promptly supply any information needed by MDH. All forms of communication are acceptable to enhance response time.
4. If the MDH becomes aware of a private drinking water well(s), or a transient non-community public water supply well, that is contaminated at a level of concern, MDH will promptly notify the MPCA Site Assessment Program contact who is Dave Moore at (651) 296-7397. As appropriate, Mr. Moore will distribute information to Dorene Fier-Tucker of the Emergency Response Program. The MPCA will assign a site team as appropriate.

B. Request for Additional HBVs

1. If, in its normal business activities, the MPCA staff detects a contaminant in a private drinking water well and the contaminant has no HRL or HBV, the MPCA will request that the MDH develop a HBV for the contaminant and conduct a risk assessment related to the contaminant detection. The request will be in the form of an interagency memorandum from the MPCA MOA Coordinator to the HRA Unit Supervisor. The MPCA coordinator and the HTA Unit Supervisor will discuss the priority of MDH's response to each request, but MDH is solely responsible for determining the timing of the response to the request. The memorandum will contain the information cited in Part IV. A. 2.
2. The MDH will transmit the HBV and any other pertinent information in the form of an interagency memorandum to the MPCA. The memorandum will include the results of a risk assessment based on a comparison of the detected concentration with the new HBV. If a well advisory is warranted, the MDH will follow the procedures outlined in Parts IV. A and VI.
3. The HBVs found in Attachment II. to this MOA may be used by MPCA in lieu of HRLs until further notice from the MDH. Attachment II is appended to and a part of this MOA.

C. Replacing Wells or Providing Treatment

The MPCA may choose to replace a contaminated private drinking water well, or provide permanent or interim treatment, at any level of contamination, i.e., without MDH issuing drinking water well advisories or taking enforcement action based on the relative cost effectiveness of well replacement, or treatment, compared to other remedies available to the MPCA. MPCA will direct any contractor or vendor providing treatment at a public water supply to obtain prior plan approval from the MDH DWP Section.

V. **PUBLIC DRINKING WATER SUPPLIES**

The MDH DWP Section is solely responsible for enforcement of the SDWA provisions pertaining to regulation of public water supplies. Pursuant to the SDWA, the MDH DWP staff is solely responsible for the collection and evaluation of data from finished water from public water supplies. When a public supply well exceeds a MCL for a VOC or SOC, MDH will promptly notify the MPCA Site Assessment Program contact who is Dave Moore at (651) 296-7397. As appropriate, Mr. Moore will distribute information to Dorene Fier-Tucker of the Emergency Response Program as appropriate.

A. Selected Data Transfer

1. *Community and Non-transient Non-community Public Water Supplies:* The agencies agree to the following procedure for selected data transfer. MDH will transmit to the MPCA all NOV's that pertain to VOCs and SOC's issued to community (municipalities, mobile home parks, etc.) and non-transient non-community (schools, factories, etc.) water supplies. The MDH will also transmit to the MPCA, the laboratory results of first occurrence of VOC or SOC contamination and on-going detections (at any level of detection) in all public water supplies (PWSs) that MDH tests. As warranted on a case-by-case basis, the appropriate agency staff will meet to discuss plans to address contamination that has caused the issuance of a MCL NOV.
2. *Transient Non-community Public Water Supplies:* Transient non-community water supplies (restaurants, gas stations, churches, etc.) are regulated for only three contaminants: coliform bacteria, nitrates, and nitrites. If MPCA monitors for contaminants other than coliform bacteria, nitrates, and nitrites at the transient non-community water supplies and the analysis indicate contamination of the drinking water, then the same procedure outlined in Parts IV and VI. of this agreement will be followed. The only difference will be that monitoring data from transient non-community water supplies will be sent to the DWP Section and the DWP Section will issue drinking water well advisories, or water use restrictions.
3. When MPCA provides treatment at a public water supply, MPCA will promptly send all subsequent treated water monitoring data to the DWP Section. (See IV. C. regarding prior plan review for treatment installation.)

B. Enforcement

When MCL exceedances warrant enforcement action in order to provide an alternative, safe, long-term water supply to the public, MDH agrees to initiate the enforcement action pursuant to the SDWA. MDH's enforcement action will require the water supplier to take corrective actions that will result in a safe, long-term water supply. The agencies agree to coordinate these enforcement actions. Pursuant to MERLA and/or PTRCA, MPCA may pursue enforcement against MERLA and/or PTRCA responsible parties. At its discretion, MPCA may use its authority pursuant to MERLA to spend state Superfund money or pursuant to PTRCA to spend Petrofund money for corrective actions that will result in a safe water supply, both immediate and long-term, and seek cost recovery, if necessary.

VI. **PRIVATE AND PUBLIC (i.e., Transient Non-community) DRINKING WATER SUPPLIES**

A. Issuing Well Advisories or Water Use Restrictions

1. The MDH is solely responsible for establishing criteria for, and issuing and rescinding well advisories, or water use restrictions. The criteria for MDH Issuing Well Advisories are:
 - Exceeding One or More Health Risk Limit. Well advisories will be issued when well water contains one or more contaminants that exceed the respective Health Risk Limit (HRL) as established by the Minn. R. pts. 4717.7100 to 4717.7800.
 - Exceeding Additivity. The use of additivity as a well advisory criterion may be necessary when two or more contaminants are found in a residential well, but their individual concentrations are below their respective HRLs. Additivity calculations will be made for carcinogens and for systemic toxicants with similar toxic endpoints, as provided in the Health risk Limits rules.
 - General Concern for the Public Health. There may be site-specific circumstances where well advisories are appropriate to protect against imminent and unknown health risks. Examples include, but are not limited to, the following: an assessment that a ground water contaminant plume which exceeds any of the above two criteria will impact residential wells in the immediate future or the presence of a contaminant of unknown toxicological potential. Well advisories may be issued on a case-by-case basis under these circumstances.
2. Multiple Contaminants Below Well Advisory Criteria
 - Well advisories will not be issued solely on the basis of multiple contaminants that do not equal or exceed the threshold criteria described in Part IV.A.1. The presence of multiple contaminants below well advisory criteria in private wells will cause the MPCA to consider broadening the analytical scan of the contaminated water from the affected wells. Should a broader analytical scan indicate that the criteria in Part III.F.3 has not been exceeded, a well advisory will not be issued.
3. Updating Well Advisory Criteria
 - When the MDH updates well advisory criteria in Part IV.A., the MPCA MOA Coordinator will be immediately notified and this MOA will be updated to reflect these changes within 30 days.

4. Well Advisory Criteria as Superfund Clean-up Levels and Remediation Requirements.
 - When the MPCA considers the well advisory criteria reasonable and necessary to protect public health, the criteria may be used as state clean-up levels and remediation requirements. The use of well advisory criteria as clean-up levels and remediation requirements is solely the responsibility of the MPCA.
5. When the MDH issues a well advisory to a well owner, MDH will inform and copy the MPCA Supervisor where the request originated from. If the MPCA did not originate the Well Advisory request, or MDH initiated water use restrictions, the MDH will inform the MPCA Coordinator of the Well Advisory, or water use restriction.
6. The MDH staff will be the primary contact for the well owner(s) or operator(s).

B. Public Meetings

1. The MDH is responsible to take the lead in organizing and presenting at public meetings when public meetings are needed in response to the issuance of well advisories.
2. The MDH and MPCA staff will work together to plan and attend all necessary public meetings resulting from the issuance of well advisories. Both staffs will work together to prepare fact sheets and to participate in other community relation activities.

C. Re-evaluating Existing Risk Assessments

The agencies agree to work together whenever it appears to either agency that an existing risk assessment should be re-evaluated. Reassessing risk may be necessary, for example, when risk assessment criteria or contaminant concentrations in a drinking water supply change.

D. Rescinding Well Advisories or Water Use Restrictions

The MDH may rescind a well advisory or water use restrictions, as it deems appropriate. The MDH will notify the MPCA in writing when a well advisory is rescinded.

E. Sampling and Analysis

1. The agencies agree to work together to identify appropriate field sampling methods as appropriate.
2. The agency that collected the data is responsible for ensuring the quality of that data. The agency that collected the data is solely responsible for determining the level of effort needed to ensure the quality of the data.

VII. MPCA RESPONSES TO CONTAMINATED PRIVATE AND PUBLIC DRINKING WATER SUPPLIES

The MPCA is solely responsible for using well advisory criteria, e.g., MCLs, HRLs and HBVs in determining remediation responses. The MPCA may respond to contaminated private and public drinking water supplies by investigating the magnitude and extent of the contamination and/or identifying the source.

A. Investigations

Investigations are chemical analyses of samples (soil, surface water, or ground water) collected in a planned out area to evaluate the magnitude and extent of ground water and surface water contamination.

1. The MPCA will consider performing an investigation based on the type and location of contaminated wells, e.g., a private drinking water well that obtains its ground water from a shallow aquifer in an area that is not served by a public water supply. Investigations may identify other potential impacted private drinking water wells in the vicinity of the known impacted well that are or could be used as a drinking water supply. Of primary concern would be wells that obtain water from similar depths or in the same aquifer as the known impacted well.
2. MERLA and PTRCA authorize the MPCA to declare drinking water emergencies when deemed necessary.
3. The MPCA is solely responsible for determining when and if an investigation is to be conducted.
4. The MPCA agrees to discuss these criteria with the MDH, if MDH so requests.
5. The agencies agree to ensure that the appropriate agency staffs work together to plan and conduct investigations, as the agencies deem appropriate.
6. The MPCA agrees to promptly notify the MDH if it chooses to conduct an investigation as defined by A.1. above.

B. Source Identification

1. Source identification is a general term for MPCA staff to describe remedial investigative efforts taken to determine the source of the release of ground water or surface water contamination.
2. The MPCA will consider source identification when a drinking water well has contaminants present and the concentration is of concern. The MPCA will inform MDH of the goal and scope of the search.
3. The MPCA agrees to discuss source identification efforts with the MDH, if MDH so requests.

VIII. SPECIAL WELL CONSTRUCTION AREAS

MDH staff from the Section of Well Management (WM) is solely responsible for establishing and enforcing special well construction areas. The MDH can establish a special well construction area independently of a request from the MPCA; however, when the MPCA initiates such a request, the procedures outlined below will apply.

If the MDH establishes a special well construction area independently of a request from the MPCA, the MDH will promptly provide a copy of the public notice to the MPCA.

A. Requesting a Special Well Construction Area

The MPCA may request that MDH designate a special well construction area based on the criteria identified in Part VIII.C.

1. The request will be in the form of an interagency memorandum from the MPCA MOA Coordinator to the MDH Well Management Supervisor. The memorandum will include a map of the area of concern showing contaminant distribution; a narrative of the problem; a brief description of the hydrogeologic and ground water quality conditions; information on land use/development patterns (if known or relevant); well construction practices; summary table(s) of all relevant data, including the names, addresses, and telephone numbers (including area codes) of owner(s) or operator(s) and/or municipalities whose ground water supply has, thus far, been impacted by the contaminant plume(s); the name and telephone number of the MPCA staff and a requested turnaround time for a determination as to whether an area advisory will be established, typically 10 days.
2. The MDH will promptly request any missing information from the MPCA that is identified in VIII. A. 2. and will identify an estimated time for making the determination regarding whether an area advisory will be established. The MPCA staff will promptly supply any additional information requested by the MDH, typically within 10 days.
3. The MDH will respond to the request for an area advisory in the form of an interagency memorandum from the MDH to the MPCA. If MDH determines that a special well construction is warranted, then the response memorandum will include an estimated schedule for establishing such an area.

B. Establishing a Special Well Construction Area

1. The agencies agree to work together to resolve the technical issues associated with establishing a special well construction area.
2. The agencies recognize the importance of educating the affected community about the ground water contamination and the reasons why a special well construction area is necessary. The agencies will work together to plan and attend all necessary public meetings resulting from the creation of a special well construction area. These efforts may include the preparation of fact sheets and other community relation activities.
3. The MDH will send a written notice to drilling contractors, affected property owners if practical, local governmental officials, and other interested parties when a special well construction area is established. A copy of the notice will be sent to the MPCA for review prior to the public notice. The notice will contain a map showing the boundary of the special well construction area, a description of the problem, the rationale for establishing the special well construction area, and the specific restrictions imposed by the special well construction area.

C. Criteria for a Special Well Construction Area

1. The MDH may issue a special well construction area based on the following criteria:
 - Exceedances of HRLs, MCLs or HBVs;
 - Contaminant plume is well defined;
 - Hydrogeology is well defined;
 - Water use patterns are known; and
 - Involves an area of one square mile or greater and five or more wells.
 - MDH may consider a smaller area if ground water conditions warrant such as severity of contamination.
2. It must be documented that the ground water contamination poses a risk to public health. Examples of such circumstances include an area in which several well advisories have been issued for water supply wells downgradient of a contaminant source, or an area in which a contaminant plume threatens to impact downgradient water supply wells to such an extent that they may become nonpotable.
3. A special well construction area will be established if the contaminant plume is present in an area where there has been or it could be expected that ground water resources might be used and the MPCA has determined that this institutional control will significantly add protection from contaminating the public.

D. Institutional Controls for a Special Well Construction Area

The MDH is responsible for determining the specific requirements that will apply within each advisory. Such requirements will be developed on a case-by-case basis and in consultation with the MPCA. Examples of such requirements include, but are not limited to, the following:

1. Restrictions on the drilling of new water supply wells or the modification of existing wells;
2. Special well construction requirements;
3. Special water quality testing requirements; and
4. Mandatory sealing of existing water supply wells.

E. Revising or rescinding an Special Well Construction Area

1. The MPCA will forward to MDH, annually, a summary of the previous year's ground water monitoring data including any changes to contaminant distribution and behavior, ground water flow patterns, and remedial actions, and any known changes to water use for each Special Well Construction Area.
2. The MDH is solely responsible for rescinding an area advisory or changing the boundaries and/or other institutional controls associated with such an area. Any such action will be made in consultation with the MPCA.
3. Circumstances which may lead to revising or rescinding an area advisory include, but are not limited to, a change in the risk assessment criteria; additional hydrogeologic or ground water quality data; or successful implementation of corrective action.

F. Establishing a Work Group

The agencies agree to establish a work group to review special well construction area policies and procedures.

IX. **WELLS AND BORINGS**

All ground water monitoring data submitted to the MPCA shall be accompanied by a Unique Well Number for each monitoring well sampled or a Well and Boring Sealing Record Number for each temporary monitoring well (e.g., Geoprobe, Hydropunch, Screened Auger, etc.) sampled. The data is unacceptable unless the identification numbers are provided.

MPCA agrees to notify MDH when MPCA discovers environmental boreholes, monitoring wells, or remedial wells not meeting the requirements of Minn. R. ch. 4725.

X. **AGENCY STAKEHOLDER MEETINGS**

In addition to regularly scheduled coordinator meetings described in Part III, the agencies agree to attend all sister stakeholder meetings where the subject of the meeting is related to this MOA. The appropriate program contact of the agency hosting the stakeholder meeting is responsible for notifying the sister agency's MOA coordinator of the upcoming meeting and providing the meeting agenda to the sister agency in a timely manner. The sister agency being invited is responsible to ensure that the appropriate sister agency staff attends the meeting.

IN WITNESS WHEREOF, the parties to this agreement have executed this agreement intending to be bound by it:

APPROVED

POLLUTION CONTROL AGENCY

By: *Sheryl A. Corrigan*
for Sheryl A. Corrigan, Commissioner

Date: 7/12/08

DEPARTMENT OF HEALTH

By: *Dianne Mandernach*
for Dianne Mandernach, Commissioner

Date: 7-27-05

ATTACHMENT 1

PROGRAM CONTACTS

Minnesota Department of Health

1.) Environmental Surveillance and Assessment (ESA) Section

Rebecca Kenow, Manager

- Health Risk Assessment Unit
 - Responsible for promulgation of Health Risk Limits (HRLs) for groundwater; development of unpromulgated Health Based Values (HBVs) for ground water; and conducting health risk assessments and issuing/rescinding well advisories on private wells.
 - Contact: **Larry Gust** (Supervisor) (651) 215-0921, or **Anne Kukowski** (651) 215-0854.
- Site Assessment and Consultation Unit
 - Responsible for assessment, consultation, and special studies on contaminated sites.
 - Contact: **Rita Messing** (Supervisor) (651) 215-0924, or **James Kelly** (651) 215-0913.

2.) Drinking Water Protection (DWP) Section

Doug Mandy, Manager

- Community Public Water Supply Unit
 - Responsible for collection and evaluation of data from finished water from public water supplies; and the enforcement of the Safe Drinking Water Act (SDWA).
 - Contact: **Richard Clark** (Supervisor) (651) 215-0747.
- Non-community Public Water Supply Unit
 - Responsible for collection and evaluation of data from finished water from transient and non-transient community water supplies, and enforcement of the SDWA, including issuance of well advisories on non-community wells.
 - Contact: **Gerald Smith** (Supervisor) (651) 215-0765.

3.) Well Management Section

Daniel Wilson, Manager

- Central Office Operations Unit St. Paul
 - Responsible for proper location, construction and ultimate sealing of wells and borings, and establishing special well construction areas.
 - Contact: **Michael Convery** (Supervisor) (651) 215-0818.

Minnesota Pollution Control Agency

1.) Superfund Section

Michael Kanner, Manager (651) 297-8564

- **Superfund (SF) Program**
 - The Superfund Program identifies, investigates and determines appropriate cleanup plans for abandoned or uncontrolled hazardous waste sites where a release or potential release of a hazardous substance poses a risk to human health or the environment.
 - Contact **Doug Wetzstein** (Supervisor) (651) 297-8609
- **Resource Conservation and Recovery Act Corrective Actions (RCRA) Program**
 - Responsible for Corrective Actions involving Hazardous Waste Treatment, Storage, or Disposal Facilities, commonly referred to as TSDs. These are permitted facilities. In addition, Interim Status Hazardous Waste Treatment, Storage, or Disposal Facilities, commonly referred to as Interim Status Facilities. These facilities at one time applied for a RCRA permit but did not complete the permitting process.
 - Contact **Steve Thompson** (Supervisor) (651) 297-8604
- **Voluntary Investigation and Clean-up (VIC) Program**
 - Provides technical assistance and administrative or legal assurances for individuals or businesses seeking to investigate or cleanup contaminated property.
 - Contact **Barb Jackson** (Supervisor) (651) 296-7212
- **Emergency Response (ER) Program**
 - Responsible for organizing the MPCA's efforts for oil and hazardous material emergencies. Chemical fires, train derailments, pipeline breaks, tanker truck accidents, Meth Labs and petroleum vapors in a sewer are examples of environmental and public health emergencies that the MPCA's ERT members respond to.
 - Contact **Steve Lee** (Supervisor) (651) 297-8610

2.) Petroleum and Closed Landfill Section

Jeff Lewis, Manager (651) 297-2668

- **Leaking Underground Storage Tank (LUST) Program**
 - The purpose of the Leaking Underground Storage Tank (LUST) program is to protect human health and the environment by evaluating, minimizing, or correcting petroleum contamination impacts to soil and water caused by leaking storage tank systems
 - Contact **Rick Newquist** (Supervisor) (651) 297-8583
- **Closed Landfill (CLP) Program**
 - Responsible for cleanup actions, complete closures, take over long-term operation and maintenance, and reimburse eligible parties for past cleanup costs at up to 112 qualified closed state-permitted landfills throughout Minnesota. More information is available from the link below.
 - Contact **Doug Day** (Supervisor) (651) 297-1780