

New York State Department of Environmental Conservation

Division of Solid & Hazardous Materials
Bureau of Hazardous Waste Facilities
50 Wolf Road, Albany, New York 12233-7252
(518) 457-9253 Fax (518) 457-9240



Michael D. Zagata
Commissioner

December 6, 1996

Mr. David A. Cushman
Kodak Park Health, Safety and Environment
Eastman Kodak Company
B326, 2nd. Flr., Room 2770
1669 Lake Avenue
Rochester, NY 14652-5135

Dear Mr. Cushman:

Re: Remedy Selection for Kodak Park WIA-KPW Site
Corrective Measures Implementation Plan Call-In

On June 24, 1996, the Department transmitted a Statement of Basis to you identifying Alternative #4 from the Corrective Measures Study (CMS) Final Report as the proposed remedy for WIA-KPW. In response to comments received during the public notice period, the Department has made the following changes to the proposed remedy for WIA-KPW:

1. Although restoration of groundwater quality appears to be technically impracticable at this time, groundwater quality criteria have been incorporated into the criteria that will be used to determine if operation of elements of the groundwater measures can be terminated. The Department will require that a performance evaluation program that incorporates groundwater quality criteria be developed and implemented for the groundwater remedy, as a component of the corrective measures implementation plan (remedial design). The structure that will be used for this evaluation is enclosed.
2. Assessment and periodic reporting on potentially applicable emerging technologies has been added as a component of the remedial program. The Department will require Kodak to report only on emerging technologies that are potentially applicable to the conditions at this site at least every five years.

A responsiveness summary, documenting public comments on the proposed remedy and the Department's responses, was issued on October 28, 1996 (P. Lent, NYSDEC to A. Rabe, Citizen's Environmental Coalition). Kodak was copied on this letter.

We are now requesting that Kodak submit a Corrective Measures Implementation plan to the Department by March 3, 1997. This plan needs to address the requirements for a "Remedial

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Design" as described in paragraph XII of DEC Order-On-Consent Index #B8-0190-88-04. The remedy shall consist of the remedial program identified as Alternative #4 in the approved CMS report for WIA-KPW, as modified by this letter. In conjunction with this submission, Kodak will also need to demonstrate financial assurance for completing the approved remedy.

If you have any questions or would like to discuss these matters, please call me or Mr. Larry Thomas of our Albany office at (518) 457-9253, or Mr. Bart Putzig in Avon at 226-2466.

Sincerely,



Edward C. Miles, Supervisor
Engineering Geology Section
Bureau of Hazardous Waste Facilities
Division of Solid & Hazardous Materials

enclosure

cc: E. Dassatti, DEC Albany
J. Reidy, EPA Region II
T. Marriott, DEC Region 8
J. Cloonan
D. Coyne
R. Elliott, MCHD
D. Napier, DOH Rochester
C. Ziarko
D. Duford, Rochester City School District

file: wiarem.kpw

Groundwater Remedy Performance Evaluation Program.

- (a) Kodak shall report to the Commissioner on the effectiveness of the Groundwater Remedial Program semi-annually. Groundwater monitoring results, piezometric levels, pumping rates and volumes, contaminant recovery levels and treatment efficiency (if applicable) data shall be provided in the reports. Monitoring data shall be evaluated annually to determine whether the monitoring parameter(s) will continue to exceed the Groundwater Protection Concentration(s). Specific programs and procedures that will be used to assess the data shall be contained in the Monitoring Program Sampling and Analysis Plan (to be developed).
- (b) Groundwater Protection Concentrations. The criteria that will be used to evaluate the groundwater quality data are described below. The Groundwater Protection Concentrations will be used as described below in determining whether Kodak may terminate operation of the groundwater recovery system.

(i) Groundwater Protection Concentrations.

(1) The hazardous constituents listed in Table 1 (attached) have been identified in the groundwater in WIA-KPW and the corresponding Groundwater Protection Concentrations have been established.

(2) When the background concentration of any additional hazardous constituent is to be used as a Groundwater Protection Concentration, the following methods shall be used to establish the background concentration:

(A) If analytical data exists for the constituent(s) of concern from at least four (4) sampling events, then the mean of the pooled data shall be used, initially, as background;

(B) If the minimum analytical data described above does not exist for the constituent(s), then Kodak shall sample the upgradient well(s) designated in the Monitoring Program Sampling and Analysis Plan monthly, beginning with the next quarterly sampling event, as necessary to generate the requisite four values to establish an initial background value; and

(C) In either case, Kodak shall obtain additional samples quarterly, as necessary, for a period of one year to establish a seasonally weighted background value.

- (c) Termination of Groundwater Recovery. Kodak must petition the Department for approval to shut down the groundwater recovery system. Termination of pumping of the groundwater recovery system may be permissible when either the "Standard Termination Criteria" or "Alternative Termination Criteria" described herein are met.

(i) Standard Termination Criteria

- (1) All Groundwater Protection Concentrations set forth in Table 1 have been achieved;
- (2) The total concentration of all organic compounds listed in Table 1 is no greater than 100 parts per billion (ppb), and no single organic compound concentration exceeds 50 ppb; and,
- (3) Termination of the groundwater recovery system may not take place until Kodak submits, and the Department approves, an analysis which indicates that the residual groundwater contamination would not result in an unacceptable risk to human health and the environment.

(ii) Termination Monitoring

Termination Monitoring will be initiated whenever Kodak determines that the groundwater recovery system is achieving the termination criteria. Twelve quarterly sampling episodes are required to demonstrate that groundwater quality meets the termination criteria (or the equivalent of three years data if some other monitoring frequency is used for certain wells). At least 60 days prior to commencing Termination Monitoring, Kodak shall submit for Department review and approval a Termination Monitoring Plan. That Plan will describe the area (or wells) for which Termination Monitoring is proposed, and the monitoring program, including wells, which will be used to determine whether the Termination Criteria have been achieved.

The basis for determining whether the Standard Termination Criteria have been met for the recovery system shall be determined by the following methodology:

Samples taken from designated groundwater monitoring wells within the capture zone of the recovery well will be analyzed and the data will be evaluated to determine the mean concentration for each constituent. The mean concentration for a constituent is determined for twelve consecutive quarterly samples (or the equivalent of three years data if some other monitoring frequency is used for some wells) using the arithmetic mean. In the event that this data includes non-detectable results, Kodak shall use one half of the minimum reportable limit as the concentration for calculating the arithmetic average. If the arithmetic mean

concentration of each constituent at each well is less than that set forth in c(i)(1) above, the Standard Termination Criteria have been met for that recovery well. With respect to meeting the Standard Termination Criteria for c(i)(2) above, the arithmetic average concentration for the various totals will be calculated using detectable results only.

Constituents that can be demonstrated as not attributable to releases from the permittee's site may be excluded from the data evaluation used to determine whether the termination criteria have been met. Kodak shall notify and have the burden to demonstrate to the Department the justification for excluding data on that basis.

(iii) Alternative Termination Criteria

In the event that the Standard Termination Criteria are not met, the only other basis for the termination of the groundwater recovery system is by meeting Alternative Termination Criteria. Once the Alternative Termination Criteria are met, Kodak may petition the Department to shut down the groundwater recovery system as provided below:

The groundwater recovery system may be shut down if:

(1) The Point of Exposure Wells designated in the Monitoring Program Sampling and Analysis Plan associated with that system and/or recovery well meet the Standard Termination Criteria in c(i)(1) and (2) above;

and

(2) The chemical concentration of hazardous constituents in all the Internal Monitoring Wells designated in the Monitoring Program Sampling and Analysis Plan, excluding the point of exposure wells defined above) associated with that system and/or recovery well have achieved the "Zero Slope Condition" defined below;

and

(3) (A) The chemical concentration of hazardous constituents in all the Internal Monitoring Wells associated with that system and/or recovery well are such that after shutdown of the recovery system and/or recovery well, the concentration of hazardous constituents in the Point of Exposure Wells downgradient of the recovery system and/or recovery well will remain below the Groundwater Protection Concentration;

or

(B) Kodak submits, and the Department approves, an analysis which indicates that the residual groundwater contamination would not result in an unacceptable risk to human health and the environment.

(iv) "Zero Slope Condition"

The zero slope condition is defined as follows: when the slope of the plot of the sum of the concentration of hazardous constituents in a well versus time is deemed zero according to the procedures described herein. The determination of said condition shall be made on a well-by-well basis at all specified groundwater monitoring wells associated with a given groundwater recovery well. The determination of whether there is a zero slope shall be made as follows:

- (1) The sum of the concentration of hazardous constituents resulting from twelve consecutive quarterly sampling events (or the equivalent of three years data if some other monitoring frequency is used for certain wells) will be plotted versus time;
- (2) If the curve which best fits these data points is linear, then a straight line using a least squares regression model will be fitted to the data and the slope of the fitted curve will be computed and designated as the estimated slope;
- (3) If the data points fit a non-linear form, then an exponential curve using a least squares regression model will be fitted to the data. The estimated slope will be the first derivative of the curve at a value of time half way between the last two sampling points; and
- (4) The estimated slope shall be deemed zero if:

(A) that slope is less than or equal to zero, (i.e. the concentration is stable);

or,

(B) the yearly decrease of the total concentration of hazardous waste constituents is less than the average overall precision of analytical methods used.

- (d) Post-Termination Monitoring and System Reactivation. Whenever Kodak petitions the Department to shut down the groundwater recovery system, the petition must include a proposal for a "Post Termination Monitoring Program". The purpose of this program shall be to continue to demonstrate that the Standard Termination Criteria or the

Alternative Termination Criteria have been achieved. Post Termination Monitoring shall be performed for three years after termination of the system in accordance with the Post Termination Monitoring Program.

Upon receipt of Department approval to shut down the groundwater recovery system, Kodak must initiate the Post Termination Monitoring Program. During Post Termination Monitoring, Kodak must keep the remedial system in place and be prepared to place it back into service, if required, within a reasonable period of time.

In the event that one of the following events occurs during Post Termination Monitoring, for termination by the Standard Termination Criteria, Kodak shall notify the Department and the Department in its discretion may require Kodak to restart the associated groundwater recovery system and/or recovery well:

- (i) Two successive results from any Point of Exposure well exceed the termination criteria by an amount greater than the average overall precision of the analytical methods used; and
- (ii) The yearly average results from any Point of Exposure well exceed the termination criteria.

Notwithstanding the above, in the event that the total of all organic compounds or the concentration of any given compound at a Point of Exposure well exceeds the termination criteria by a factor of 10, the Department will be notified, and the well will be resampled within 30 days to verify the analysis. If the original analysis has been verified, the associated groundwater recovery system shall be restarted by Kodak as soon as practicable unless Kodak receives authorization from the Department to delay reactivation.

For termination by the Alternative Termination Criteria, Kodak shall notify the Department and the Department in its discretion may require Kodak to restart the associated groundwater recovery system and/or recovery well if the Alternative Termination Criteria are no longer met.

TABLE 1
GROUNDWATER PROTECTION CONCENTRATIONS
FOR WIA-KPW - KODAK PARK

Compound	Groundwater Protection Concentration (ug/l)
Metals:	
Antimony	3
Arsenic	25
Barium	1,000
Beryllium	3
Cadmium	5
Chromium	50
Copper	200
Iron	300
Lead	15
Magnesium	35000
Manganese	300
Mercury	2
Nickel	700
Selenium	10
Silver	50
Sodium	20000
Thallium	4
Vanadium	250
Zinc	300
Semivolatile Organics:	
Benzo(a)anthracene	0.002
Benzo(b)fluoranthene	0.002
Benzo(k)fluoranthene	0.002
Bis(2-Ethylhexyl)phthalate	50
2-Chloronaphthalene	10
2-Chlorophenol	f
Chrysene	0.002
2,4-Dichlorophenol	f

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FOR WIA-KPW - KODAK PARK

Compound	Groundwater Protection Concentration (ug/l)
Diethyl Phthalate	50
2,4-Dimethylphenol	f
Di-n-Butyl Phthalate	4
Di-n-Octyl Phthalate	50
Ideno(1,2,3-cd)pyrene	0.002
Naphthalene	10
n-Nitrosodiphenylamine	50
o-Cresol	f
o-Dichlorobezene	4.7
o-Nitrophenol	f
p-Chloroaniline	5
p-Chloro-m-cresol	f
p-Cresol	f
p-Dichlorobenzene	4.7
Phenacetin	5
Phenol	f
Pyridine	50
p&m-Cresol	f
Triphenyl phosphate	50
Volatile Organics:	
Acetone	3500
Acetonitrile	210
Benzene	0.7
Chlorobenzene	5
Chloroethane	5
Chloroform	7
1,1-Dichloroethane	5
1,2-Dichloroethane	5
1,2-Dichloroethene	5

TABLE 1

GROUNDWATER PROTECTION CONCENTRATIONS
FOR WIA-KPW - KODAK PARK

Compound	Groundwater Protection Concentration (ug/l)
1,1-Dichloroethylene	5
1,2-Dichloropropane	5
1,4-Dioxane	3.5
Ethylbenzene	5
Ethylene Glycol	50
Methyl Alcohol	18000
Methyl Chloride	5
Methyl Ethyl Ketone	1800
Methylene Chloride	5
n-Butyl Alcohol	3500
Propylene Oxide	0.1
1,1,2,2-Tetrachloroethane	5
Tetrachloroethylene	5
Tetrahydrofuran	50
Toluene	5
1,1,1-Trichloroethane	5
1,1,2-Trichloroethane	5
Trichloroethylene	5
Vinyl Acetate	35000
Vinyl Chloride	2
Xylenes	5
Pesticides and PCBs:	
Aroclor-1248	0.1

f = total phenols not to exceed 1 ug/l.