



State of New Hampshire  
DEPARTMENT OF ENVIRONMENTAL SERVICES

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February 5, 1997

Mr. David Lim  
Remedial Project Manager  
U. S. Environmental Protection Agency  
Waste Management Division (HPR-CAN1)  
JFK Federal Building  
Boston, MA 02203

**Subject: Jaffrey, King Manufacturing RCRIS Corrective Action  
Environmental Indicator Review Reports  
DES Site No. 870913**

Dear Mr. Lim:

On November 15, 1996 you wrote to the New Hampshire Department of Environmental Services concerning the King Manufacturing Site in Jaffrey, New Hampshire. Specifically, you provided guidance to the Department on how to prepare RCRIS environmental indicator review reports for the subject site. These reports are prepared to document whether or not remediated or stabilized hazardous waste sites meet EPA's criteria for certain RCRIS determinations. For the King site, EPA is seeking the RCRIS event code 725 and 750 determinations, Basis for Human Exposures Controlled Determination and Basis for Groundwater Releases Controlled Determination, respectively.

Based on the Department's knowledge of the environmental conditions at the King Manufacturing site, we previously advised you that this site meets the criteria for the RCRIS event codes 725 and 750. Based on this guidance from the Department, you then requested that the Department prepare Environmental Indicator review reports for the 725 and 750 codes.

The Department has prepared these two reports and they are enclosed for your review. We were pleased to have the opportunity to prepare these reports for EPA. If you have any questions or need additional information about the King site, please do not hesitate to contact me at 603-271-2800.

Sincerely yours,

James B. Zeppieri, C.P.G.  
Hazardous Waste Remediation Bureau

Enclosures  
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Basis for Human Exposures Controlled Determination  
RCRIS Code CA725  
at  
King Manufacturing  
EPA ID No. NHD001090729  
Jaffrey, New Hampshire

The purpose of this report is to provide the basis for determining that the King Manufacturing Facility can be recorded with the status code of **YE** under the RCRIS Event Code of 725 - Human Exposures Controlled.

The July 29, 1994 RCRIS Corrective Action Environmental Indicator Event Codes CA725 and CA750 memo from EPA's Office of Solid Waste specifies that the event code for Human Exposures Controlled, CA725, may be counted when one or both of the following conditions are met:

1. Remedial measures have been implemented with the result that all maximum contaminant concentrations detected or reasonably suspected are less than or equal to their respective action levels, in this case, the New Hampshire Department of Environmental Services' Ambient Groundwater Quality Standards, or
2. There are no unacceptable human exposures to any contaminant concentration above action levels that has been detected or is reasonably suspected based on current contaminant concentrations and current site conditions. Action has been taken or site conditions are such that unacceptable threats to human health from actual exposure to the contamination are not plausible based on current uses of the site.

Based on a review of available information contained in files maintained by the New Hampshire Department of Environmental Services, and subject to the limitations cited below, the Department of Environmental Services has determined that there are no current unacceptable risks to humans due to releases of regulated contaminants at the facility. This determination is based on the conclusions described in number 1 below and supplemented by additional facts in numbers 2 and 3 below and the references listed in number 4 below.

1. Conclusion

There are no unacceptable human exposures to any contaminant concentration above action levels that has been detected or is reasonably suspected based on current site conditions. No known contamination remains at the facility that may require further remediation. RCRA closure has been undertaken and site conditions

are such that all releases of regulated contaminants to environmental media been controlled. Cyanide plating wastes were removed from the site, some residual cyanide contamination in the remaining in situ soils was also removed, the remaining in situ soils were remediated in place before the surface impoundment was closed and any residual cyanide contamination remaining after treatment and closure has attenuated to the extent that human exposures have been controlled, both on- and off-site.

## 2. Release Summary

Groundwater: Cyanide is the only compound of potential concern, it has been detected at a maximum concentration of 56 milligrams per liter (mg/l) of total cyanide at groundwater monitoring well M-4S in January 1984. Cyanide levels in groundwater declined steadily after closure of the surface impoundment until the concentrations in all on-site and off-site monitoring wells were below the Ambient Groundwater Quality Standard (AGQS) of 0.2 mg/l. Because of this steady decline and compliance with AGQS, groundwater monitoring was no longer required after the Department of Environmental Services' Groundwater Management Permit expired in December 1994.

Soil: Cyanide is the only compound of potential concern. After the cyanide sludges and some underlying in situ soils were removed, additional analyses were performed to determine residual cyanide levels. For weak acid dissociable cyanide, the most toxic form of cyanide, the values ranged from below method detection to 24 ppm. To further reduce residual cyanide levels in the remaining soils that may have been contaminated with cyanide through downward leaching from the surface impoundment, King was required to perform in situ soil treatment with lime and sodium hypochlorite. No analytical data were obtained for the in situ soils after treatment to determine post treatment cyanide levels but the maximum concentration of cyanide after treatment of the in situ soils, 24 mg/kg, is below the Department's soil standard of 100 mg/kg, adopted in September 1996.

## 3. Relevant Conditions and Assumptions

Groundwater: Contamination releases (cyanide only) have been detected beyond the facility's property line through 1992. Cyanide was not detected in any off-site wells in 1993 or through the end of required groundwater monitoring in 1994. Two consecutive rounds of groundwater quality sampling and analysis (July and November 1994) reported total cyanide concentrations below the Department's Ambient Groundwater Quality Standards of 0.2 milligrams per liter.

Off-site human exposures to contaminated groundwater are not plausible as the most recent off-site groundwater quality data indicate that cyanide was not detected.

Surface Water: There are no surface water bodies at the site and there are no plausible surface water pathways at the site by which any residual contamination associated with the surface impoundment could contaminate surface waters.

Sediment: There are no known sediments either on- or off-site that have been contaminated by releases of cyanide from the surface impoundment.

Air: Soil and groundwater data show no source area from which air emissions would be expected.

Biota: Very low residual levels of cyanide contamination found in soil and groundwater suggest little potential for risk to human health through the food chain.

On-site workers use water supplied by the public water system for Jaffrey.

Exposure of trespassers, on-site workers or visitors to cyanide wastes or residual cyanide contamination in soils is implausible due to remediation, closure and capping of the surface impoundment.

#### 4. References

1. Comprehensive Monitoring Evaluation, King Manufacturing Company, Inc., Jaffrey, New Hampshire, New Hampshire Department of Environmental Services, September 1993.
2. Correspondence from Ralph Wickson, Department of Environmental Services to King Manufacturing, June 20, 1994.
3. Correspondence from Ralph Wickson, Department of Environmental Services to King Manufacturing, December 7, 1994.

5. Sign Off

Prepared by James B. Zeppieri Date 2/7/97

James B. Zeppieri, Project Manager  
Hazardous Waste Remediation Bureau  
New Hampshire Department of Environmental Services

Approved by John M. Regan Date 2/7/97

John M. Regan, Supervisor  
Hazardous Waste Remediation Bureau  
New Hampshire Department of Environmental Services

Basis for Groundwater Releases Controlled Determination  
RCRIS Code CA750  
at  
King Manufacturing  
EPA ID No. 001090729  
Jaffrey, New Hampshire

The purpose of this report is to provide the basis for determining that the King Manufacturing Facility can be recorded with the status code of **YE** under the RCRIS Event Code of 750 - Groundwater Releases Controlled.

The July 29, 1994 EPA Memorandum from the Office of Solid Waste to EPA Regional Waste Management Division Directors concerning RCRIS Corrective Action Environmental Event Codes CA725 and CA750 specifies that the CA750 Event Code, Groundwater Releases Controlled Determination, may be counted when one or both of the conditions listed below are fulfilled and documented. These conditions apply to all known or suspected instances of groundwater contamination in excess of action levels or in excess of some other specified clean up level. These conditions are:

1. An engineered system has been installed that is designed and operated to effectively control further migration of contaminants beyond a designated boundary, or
2. The New Hampshire Department of Environmental Services, as the state equivalent authorized by EPA for RCRA C Corrective Action, has determined that the groundwater cleanup objectives can be met without the use of an engineered system through the remedial measures selected, including facilities where the contamination will naturally attenuate.

Based on a review of available information contained in files maintained by the Department of Environmental Services, and subject to the limitations cited below, the Department of Environmental Services has determined that the groundwater cleanup objectives have been met without the use of an engineered system through the remedial measures selected, including provisions for the contamination to naturally attenuate. This determination is based on the conclusions described in number 1 below and supplemented by additional facts in numbers 2 and 3 below and the references listed in number 4 below.

1. Conclusion

No known contamination remains at the facility that may require

further remediation. RCRA closure has been undertaken and site conditions are such that all releases of regulated contaminants to groundwater have been controlled. Cyanide plating wastes and some soils immediately below the plating wastes were removed from the site for appropriate off-site disposal. Residual cyanide contamination in the remaining soils was remediated before the surface impoundment was closed. If there was any residual cyanide contamination in the soils beneath the surface impoundment after treatment and closure, it has attenuated to the extent that it no longer serves as a source of groundwater contamination. Since 1994, groundwater quality has been in compliance with Ambient Groundwater Quality Standards (AGQS), both on- and off-site.

## 2. Release Summary

Groundwater: Cyanide is the only compound of potential concern, it has been detected at a maximum concentration of 56 parts per million of total cyanide at groundwater monitoring well M-4S in January 1984. Cyanide levels in groundwater declined steadily after closure of the surface impoundment and have met AGQS since 1994. Because of this steady decline and compliance with AGQS, groundwater monitoring was no longer required by the Department of Environmental Services after the Department's Groundwater Management Permit expired in December 1994.

Soil: Cyanide is the only compound of potential concern. After the cyanide sludges and some underlying in situ soils were removed, additional analyses were performed to determine residual cyanide levels. For weak acid dissociable cyanide, the most toxic form of cyanide, the values ranged from below method detection to 24 milligrams per kilogram (mg/kg). The Department's standard for cyanide in soil, adopted in September 1996, is 100 mg/kg. To further reduce residual cyanide levels in the remaining in situ soils, King was required to perform in situ soil treatment with lime and sodium hypochlorite. No analytical data were obtained for the in situ soils after treatment to determine post treatment cyanide levels.

## 3. Relevant Conditions and Assumptions

Groundwater: Contamination releases (cyanide only) were detected beyond the facility's property line through 1992. Cyanide has not been detected in any off-site wells in 1993 or through the end of required groundwater monitoring in 1994. Two consecutive rounds of groundwater quality sampling and analysis (July and November 1994) reported total cyanide concentrations below the Ambient Groundwater

Quality Standard of 0.2 milligrams per liter (mg/l).

Surface Water: There are no surface water bodies at the site and there are no plausible surface water pathways at the site by which any residual contamination associated with the surface impoundment could contaminate surface waters.

On-site workers use water supplied by the public water system for Jaffrey.

Off-site human exposures to contaminated groundwater are not plausible as the most recent off-site groundwater quality data indicate that cyanide was not detected.

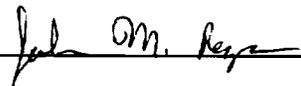
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