

US EPA ARCHIVE DOCUMENT

**STATEMENT OF BASIS/FINAL DECISION AND  
RESPONSE TO COMMENTS SUMMARY**

REGION III  
ID# 0136

**NGK Metals Corporation**

Muhlenberg, PA

(Signed September 30, 1992)

**Facility/Unit Type:** Beryllium and alloy production  
**Contaminants:** Beryllium, Hexavalent Chromium (VI), Total Chromium, Cadmium, Copper, 1,1-Dichloroethylene (1,1-DCE), Fluoride, Trichloroethylene (TCE)  
**Media:** Air, ground water, sediments, soil, surface water  
**Remedy:** Institutional controls; ground-water pumping and treatment; capping; run-on/run-off controls

**FACILITY DESCRIPTION**

On August 29, 1988, EPA and NGK Metals Corporation (NGK) entered into a Consent Order pursuant to Section 3008(h) of RCRA, which required NGK to conduct an RFI and CMS to determine the nature and extent of contamination at its facility in Muhlenberg Township, PA. On November 23, 1991, EPA conditionally approved the RFI pending a further study on contaminant leaching, which was approved on April 3, 1992. NGK submitted the CMS and a Human Health and Ecological Assessment (HHEA) on June 11, 1992. In addition, EPA conducted assessments of the human health and ecological effects of the facility in June 1992.

Since 1986, NGK has owned and operated the 65-acre facility located in an industrial area and surrounded by residential areas. The facility is currently regulated as a hazardous waste generator. Air emissions at NGK primarily consist of beryllium and chromium. These emissions are regulated under the National Emissions Standards for Hazardous Air Pollutants (NESHAP). Historically, industrial activities involved the production of beryllium salts and various shapes of beryllium products and alloys. Industrial by-products and process

wastes were discarded in on-site SWMUs, which are the principal source of ground-water contamination. In addition, NGK has operated an on-site non-hazardous residual waste landfill permitted by PADER since 1979.

In 1979, a ground-water monitoring network was installed to detect contaminants associated with NGK's non-hazardous landfill. The network indicated the presence of beryllium and chromium in the ground water. Contamination of soil and ground water occurred as a result of storage of process materials, process waste, and wastewater treatment residues in unlined lagoons and waste piles prior to the passage of RCRA. In February 1988, EPA completed an RFA, which revealed that the primary drinking water standards were exceeded for chromium and fluoride. In addition, surface soil discoloration indicated that further on-site soil evaluation was required.

Ground water flows through two zones, a local shallow aquifer zone and a deep bedrock aquifer zone. Within the local shallow zone (0-100 feet), ground water flows to the west with components flowing towards the northeast in the northern portion of the facility. Deep ground water flows west-southwest.

## CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppm)	Action Level (ppm)	Cleanup Goal <sup>(1)</sup> (ppm)	Point of Compliance**
air	ambient	Beryllium Chromium	0.00079* 0.00616*	not given	0.001* 0.0002*	ambient air
ground water	100,000 gpd	Beryllium Chromium VI Total Chromium Copper 1,1-DCE Flouride TCE	0.553 1.3 1.69 0.275 0.0253 128.0 0.0087	not given " " " 0.007 4.0 0.005	0.004 0.1 0.1 1.3 0.007 4.0 0.005	Shallow Wells: 8A, 9A, 14A, 15A, 16A  Deep Wells: 12B, 13B  Off-site Wells
soil <sup>(2)</sup>	54 acre ft	Beryllium Cadmium Total Chromium Copper Flouride	945 60.1 227 4,910 140	not given	0.67 510 5,100 38,000 61,000	area capped
surface water (Laurel Run)	under study	Beryllium Total Chromium Copper Flouride	0.0011 0.0418 0.0418 0.87	not given	0.004 0.1 1.3 4.0	Off-site Wells: MW-24, MW-25, MW-26, BP-1, LR-6, OS-1, OS- 2, Reading Crest
sediments (Laurel Run)	under study	Beryllium Total Chromium Copper Flouride	1.77 10.0 163.0 12.5	not given	0.67 5,100 38,000 61,000	under study

(1) These risk-based concentrations in soil were derived assuming incidental ingestion in an occupational setting, and correspond to the concentration associated with either a 10<sup>-6</sup> carcinogenic risk or the threshold level for other adverse health effects.

(2) Soil data are from Disposal Area Drain Field samples.  
\* ug/m<sup>3</sup>  
\*\* MW- Monitoring Well  
LR- Laurel Run  
BP- Berks Products Quarry  
OS- Off-site

Laurel Run Creek is adjacent to the facility and flows south-southwest towards the Schuylkill River. Surface water drainage flows into the Water Street storm sewer system which discharges into Laurel Run. The creek supports a variety of aquatic insects and fish.

### EXPOSURE PATHWAYS

Exposure pathways to contamination include ingestion by on-site workers and absorption by aquatic life in Laurel Run. Although

ground water is not used for human consumption on-site, the exposure scenario was used for assessment purposes. The risk is primarily based on potential ingestion of 1,1-DCE in ground water and inhalation of beryllium in soils by workers on-site. Off-site health risks are associated with potential ingestion of 1,1-DCE, flouride, and hexavalent chromium in ground water. Laurel Run is reportedly void of live fish, aquatic insects and organic matter below the facility's NPDES discharge point. EPA concluded (in its HHEA) that the aquatic life in

Laurel Run is under stress and under current conditions there is a significant impact from copper contaminants on the stream aquatic life in the vicinity of the facility. No endangered or threatened species reside within a half-mile radius of the facility.

### **SELECTED REMEDY**

The selected remedy will address the contaminated soils and ground water at the facility by relocating an on-site non-hazardous waste pile to provide proper drainage, covering SWMUs with an impermeable asphalt-geotechnical cap for source control, constructing interceptor swales for run-on/run-off control, and pumping and treating contaminated ground water. Institutional controls will limit access to the facility and prevent future exposure to the contamination through site security and deed restrictions that limit future land uses. Ground water will be treated with a granular activated carbon (GAC) recovery system. Treated wastewater will be discharged to Laurel Run, the Schuylkill River, or the City of Reading sanitary sewer system in accordance with the Clean Water Act and a NPDES permit.

The future use of the facility will be limited to industrial scenarios, and activities involving ground water or source areas, particularly excavation, will be subject to EPA review and approval.

The approximate collective cost of EPA's selected remedy will be \$3,679,000 in capital costs and \$157,000 in annual O&M costs. The selected ground-water pump and treat system will operate for an estimated 15 to 30 years.

Muds, soils, and water from the drilling operations may have to be collected, contained, and treated to prevent release of the contaminants to the environment. Treated ground water

would be discharged in accordance with the Clean Water Act. Source areas will be maintained through periodic maintenance of the soil cap and interceptor swales.

Additional remedial activities may be required in the Laurel Run stream area pending the results of the expanded ecological investigation.

### **INNOVATIVE TECHNOLOGIES CONSIDERED**

None.

### **PUBLIC PARTICIPATION**

Thirty-five people attended a public meeting held on July 22, 1992. The public comment period on EPA's proposed remedy extended from July 24, 1992 to September 5, 1992. EPA received 123 comments. Residents were concerned about contaminated water from specific wells or areas, potential health effects in the community, risks from air contamination, and the potential for contamination at the facility to affect Lake Ontelaunee (the public drinking water supply for the City of Reading). Residents expressed concern about the ability of NGK's contractor to perform an impartial assessment because an employee had previously worked for NGK. In addition, NGK recommended several changes to the SB and the selected remedy. NGK proposed the following modifications to the selected remedy: utilize one SWMU as a storm retention pond by installing a permeable geotechnical membrane for drainage, allow ground-water recovery technologies other than GAC, use treated ground water in manufacturing processes, and delete the required additional ecological investigation of Laurel Run. EPA did not accept NGK's proposed changes; therefore the selected remedy remained unchanged.

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**NEXT STEPS**

EPA will provide NGK an opportunity to negotiate an administrative order which will require NGK to implement the selected remedy and may also require additional corrective action pursuant to the ecological investigation of Laurel Run. To ensure that media cleanup standards continue to be maintained, the aquifer will be monitored annually at those recovery wells where pumping has ceased for five consecutive years.

**KEY WORDS**

air, ground water, sediments, soil, surface water; ingestion; VOCs, heavy metals; capping, carbon absorption, excavation, institutional controls, monitoring, off-site discharge, relocation

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