
Explanation of Significant Differences



WOLFF-ALPORT CHEMICAL COMPANY SUPERFUND SITE

Ridgewood, Queens, New York

EPA Region 2

March 2024

INTRODUCTION

The purpose of this Explanation of Significant Differences (ESD) is to explain a change made by the U.S. Environmental Protection Agency (EPA) to the remedy selected for the Wolff-Alport Chemical Company (WACC) Superfund site, located in Ridgewood, Queens, New York.

Under Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. § 9617(c) (CERCLA), and Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Contingency Plan (NCP), EPA is required to issue an ESD when, after a remedy is selected, EPA determines that a significant, but not fundamental, change is to be made in either scope, performance, or cost of a selected remedy.

This ESD provides a brief history of the site, describes the original remedy selected for the site, and describes a significant change that is being made to the selected remedy.

The remedy for the site includes permanent relocation of certain residential and commercial tenants, demolition of several buildings located at, and in the vicinity of, the former WACC facility (the Property¹), excavation of radiologically-contaminated soil at the Property, off-Property,² and beneath adjacent roadways and sidewalks, as well as excavation/replacement/cleaning of contaminated sewers (the sewers, sidewalks, and roadways are referred to as New York City [NYC]-owned property), along with off-site disposal of the contaminated soils and debris.

After completion of the soil excavation and backfilling with

clean fill, it is anticipated that all soil containing thorium and uranium concentrations greater than their respective soil remediation goals (RGs) will have been properly addressed. As a result, concentrations of radon and thoron are expected to meet their respective indoor air RGs in the remediated areas. For both the Property and 308 Cooper Street, where there is a potential that new structures will be built, this expectation cannot be confirmed until the new structures exist and remediation at the NYC-owned property portion of the site have been completed. If the soil excavation at either the Property or 308 Cooper Street is completed while the work to be performed at the NYC-owned property remains uncompleted, then radon and thoron generated in these yet-to-be completed areas could migrate toward the already remediated property(ies). Therefore, EPA has determined that, to ensure the protectiveness of the remedy, to the extent that the soil excavation at the Property or 308 Cooper Street is completed before the NYC-owned property remediation is completed, an institutional control (IC)³ will be needed for the Property and/or 308 Cooper Street, as applicable. The IC would require the owners of the already remediated property(ies) described above to contact EPA about using radon resistant construction methods in rebuilding structures or require radon mitigation systems in newly-built buildings. If radon mitigation systems are utilized, such measures will need to be maintained until the remediation at the NYC-owned property has been completed.

If radon mitigation systems are installed, the purpose of such systems would be to reduce indoor air concentrations of radon and thoron below their respective RGs. To that end, a letter was sent by EPA to the NYC Department of

¹ The Property includes 1125, 1127, 1129, and 1133 Irving Avenue (Block 3725, Lots 46, 44, 42, and 33, respectively), 1514 Cooper Avenue (Block 3725, Lot 48), and a former railroad spur (Block 3725, Lot 31).

² Off-Property includes 323 and 350 Moffat Street (Block 3443 and Lots 54 and 118, respectively) and 308 Cooper Street (Block 3443, Lot 37, currently, a vacant property).

³ ICs are non-engineered controls, such as legal property use restrictions, imposed for the purpose of reducing or eliminating the potential for human exposure to contamination and/or protect the integrity of a remedy.

Buildings (DOB), requesting that, upon receipt of a request for a building permit for any portion of the Property or 308 Cooper Street, DOB would direct the relevant property owner to contact EPA about implementing the above-noted mitigation measures. This request of DOB will remain in effect until completion of remediation at the NYC-owned property. Periodic reminders to DOB will be issued by EPA until no longer needed. The initial notification and the subsequent reminders are an informational IC.

This ESD serves to document EPA's determination to incorporate into the remedy an informational IC in the form of the above-noted letters to DOB regarding the installation of mitigation systems. The IC will remain in place until the remediation of the NYC-owned property has been completed or the previously remediated areas as described above have been developed with the above-noted mitigation measures, whichever is sooner.

The remedy as modified by this ESD remains protective of human health and the environment.

SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

The site includes an area of radiological contamination in Ridgewood, Queens, New York on the border of Bushwick, Brooklyn. One portion of the site, the Property, is comprised of a roughly triangular area of approximately 0.75 acres that is now subdivided into several commercial properties. The site also includes impacted, adjacent areas including streets, sidewalks, other commercial and residential properties, and the sewer system where contaminants have been disposed of or migrated, or have the potential to migrate, in the future. A site location map is provided as Figure 1.

The former WACC facility property is bound by Irving Avenue to the southwest, Cooper Avenue to the northwest, and a commercial property to the east. At present, the Property is covered with contiguous structures, except along its northern and eastern edges in an area that was formerly used as a rail spur. The neighborhoods surrounding the former WACC Property contain light industry, commercial businesses, residences, a school, and a daycare center. An active rail line passes within 125 feet to the southeast of the property.

The Property is subdivided into several commercial properties consisting of parcels on Block 3725 which, as shown on the tax map of Queens County, includes a gravel-covered former rail spur that was used to store automobiles (Lot 31), a one-story dilapidated warehouse (Lot 33), a subdivided one-story building that was used for storage and was occupied by a construction company and an auto body shop with

an adjoining office (Lot 42), a one-story building that was most-recently occupied by an appliance store (Lot 44), a two-story building that housed a delicatessen, office space, and three residential apartments, as well as an attached one-story building that housed a tire shop (Lot 46), and a one-story building that housed an auto repair shop and related office space (Lot 48). See footnote 1 on page 1 for the corresponding addresses.

All the structures at the Property are currently vacant.

Site History

WACC operated at the Property from the 1920s until 1954, importing monazite sand via rail and extracting rare earth metals from the material. The monazite sand processed at the facility generally contained approximately 6-8% or more of thorium and 0.1-0.3% of uranium. The acid treatment process used by WACC converted the phosphate and metal component of the monazite to aqueous species, rendering the rare earth materials extractable while dissolving the thorium and uranium in an acid, such as sulfuric and nitric acid, generating waste process-liquors and tailings. This process concentrated thorium-232 (Th-232) and uranium-238 (U-238), both of which are radioactive, in the process liquors. Both thorium-232 and uranium-238 isotopes undergo slow radioactive decay. In this decay process they continuously generate radon-220 (a.k.a. thoron) and radon-222 (a.k.a. radon) radioactive gases that migrate to the ground surface, driven by pressure and density gradient differentials.

During its operation, WACC occupied three structures which were located on the current Lots 42 and 44. WACC's operation included two areas, one between the buildings on Lot 42 and the other on the eastern end of the property at the northern end of Moffat Street. These areas were reportedly used as staging areas for monazite sands or waste tailings (post-processing waste materials) containing Th-232 and U-238. The waste tailings were likely spread or buried on the Property. WACC disposed of the liquid process wastes into the sewer system running along Irving Avenue. According to the U.S. Department of Energy, the Atomic Energy Commission (AEC) ordered WACC to halt sewer disposal of the waste containing thorium in the fall of 1947. Thereafter, thorium laced waste was precipitated as thorium oxalate sludge and sold to the AEC.

Initial scoping-level radiological surveys performed by New York State Department of Environmental Conservation (NYSDEC), NYC Department of Health and Mental Hygiene (NYCDOHMH), and EPA in 2007 revealed radiological impacts throughout the WACC Property and the nearby sewer. Follow-up investigations by the NYC Department of Design and Construction (NYCDDC) in 2009-2010 found

waste tailings consisting of black or gray ash-like material in a contaminated soil layer beneath the WACC Property buildings, nearby sidewalks, and asphalt surfaces along Irving Avenue and Moffat Street, and in the surface soils of the former rail spur. Elevated Th-232 concentrations were found in soil samples containing waste tailings. During the NYCDDC investigation, elevated levels of thoron and radon gas were detected in the deli basement.

In February 2012, the Agency for Toxic Substances and Disease Registry (ATSDR) issued a Health Consultation in which it was noted that exposure to the residual radioactive contamination at the site may pose a health threat under certain long-term exposure scenarios. Based on the ATSDR document, EPA prepared a Removal Site Evaluation for the site in August 2012 to determine whether an immediate response action (*i.e.*, a removal action) was necessary. In September 2012, EPA collected gamma radiation exposure rate measurements and thoron and radon concentration measurements on and around the perimeter of the suspected source area and at background locations. The gamma radiation exposure rate measurements identified hot spots along the former rail spur, under the sidewalks and streets adjacent to the former facility, and in two businesses.

Based upon this evaluation, EPA conducted a removal action between October 2012 and April 2014 that consisted of a gamma radiation⁴ assessment and radon sampling at the site, the installation of a radon mitigation system in one on-Property building where radon concentrations exceeded EPA's action level of 4 picocuries per liter, and the installation of lead, steel, and concrete shielding in certain areas of the site, based on recommendations collaboratively developed by EPA and NYCDOHMH. Gamma exposure rates were observed to have been reduced between 60-95% based on a comparison of pre-shielding and post-shielding gamma radiation surveys, but levels were not reduced to below the regulatory dose rate limit promulgated in 40 CFR Part 192.12 (b)(2).

In July 2013, EPA, New York State Department of Health and NYCDOHMH conducted a radiological and radon/thoron ambient concentration assessment of the neighborhood within a half-mile radius of the site. The data collected during this assessment indicated that there is no unacceptable exposure in the surrounding community from radiological contaminants located at the site.

The site was included on the National Priorities List on May 12, 2014.

Remedial investigation-related field work was conducted at

⁴ Gamma radiation arises from the radioactive decay of atomic nuclei.

the site from September 2015 to March 2017. Contiguous radiological impacts were found below the ground surface under the former WACC Property, under the adjacent sidewalk, under the Irving Avenue roadway, inside and around the sewer line running along Irving Avenue, and in other neighboring areas. This investigation culminated in the selection of a remedy for the site in a September 25, 2017 Record of Decision. The selected remedy consists of permanent relocation of the six commercial and three residential tenants of the buildings on the former WACC Property, demolition of the former WACC buildings, contaminated soil excavation, contaminated sewer removal/cleaning, and off-site disposal of the contaminated soils and debris. The remedial action objectives were as follows:

- to reduce or eliminate human exposure via inhalation of radon and thoron, incidental ingestion, dermal adsorption, and external exposure to radiological contamination (Ra-226 and Th-232) that may be present within the former WACC Property buildings to levels protective of current and anticipated future use by preventing exposure to contaminant levels above RGs;
- to reduce or eliminate the human exposure threat via inhalation, incidental ingestion, dermal adsorption, and external exposure to contaminated site soils and solids (*i.e.*, sewer pipe and sediments/sludge in sewers) to levels protective of current and anticipated future land use by preventing exposure to benzo(a)pyrene, Aroclor-1260, Ra-226, and Th-232 concentrations above RGs; and
- to prevent/minimize the migration of site contaminants off-site through surface runoff, dust particulate migration, and discharges from combined sewer outfalls.

The remedial action has been divided into three general phases—relocation/building demolition; soil remediation on privately-owned properties to be completed by EPA; and remediation of NYC-owned property, including sidewalks, roadways, and sewers within public rights-of-way to be completed by NYC.

Therefore, the radiologically-contaminated areas of soil at the site will be partially excavated by EPA and partially excavated by NYC under two distinct remediation projects with two different timelines.

The tenant relocations were performed by the U.S. Army Corps of Engineers (USACE) on behalf of EPA. Funding was made available for this work in September 2020. After the remedy was selected, EPA and USACE engaged with the six commercial and two remaining residential tenants at the Property on many occasions over five years, with

limited success. Following the issuance of administrative orders for access to both the commercial tenants and the property owners, and subsequent enforcement by the U.S. Department of Justice of some of those administrative orders in federal court, all the tenants vacated by August 31, 2023.

Designs have been completed by USACE for the building demolitions and on-Property soil remediation and designs are underway for the off-property soils (being performed by USACE's contractor) and the adjacent sewer system and adjacent streets and sidewalks (being performed by NYC, the owner, under a separate timeline). The building demolition remedial action is currently underway.

BASIS AND DESCRIPTION OF SIGNIFICANT DIFFERENCES

After completion of the soil excavation and backfilling with clean fill, it is anticipated that all soil containing thorium and uranium concentrations greater than their respective soil RGs will be met. As a result, concentrations of radon and thoron are expected to meet their respective indoor air RGs in the remediated areas. For both the Property and 308 Cooper Street, where there is a potential that new structures will be built, this cannot be confirmed until the new structures exist and remediation at the NYC-owned property portion of the site have been completed. If the soil excavation at either the Property or 308 Cooper Street is completed while the NYC-owned property portion remains unaddressed, then radon and thoron generated in the unaddressed area could migrate toward the already remediated property(ies). Therefore, EPA has determined that, to ensure the protectiveness of the remedy, if the soil excavation at the Property or 308 Cooper Street is completed before the NYC-owned property remediation is completed, an IC will be needed. The IC will require the owners of the already remediated property(ies) described above to contact EPA about using radon resistant construction methods in rebuilding structures or require radon mitigation systems in newly-built buildings. If radon mitigation systems are installed, the purpose of such systems would be to reduce indoor air concentrations of radon and thoron below their respective RGs. To that end, on January 31, 2024, a letter was sent by EPA to DOB, requesting that, upon receipt of a request for building permits for the Property or 308 Cooper Street, DOB would direct the relevant property owner to contact EPA about implementing the above-noted mitigation measures. This request of DOB will remain in effect until completion of remediation at the NYC-owned property. Periodic reminders to DOB will be issued by EPA until no longer needed. The initial notification and the subsequent reminders are an informational IC.

This ESD serves to document EPA's determination to incorporate into the remedy an informational IC in the form of the above-noted letters to DOB regarding the installation of mitigation systems. The IC will remain in place until the remediation of the NYC-owned property has been completed or the previously remediated areas previously described have been developed with the above-noted mitigation measures, whichever is sooner.

The remedy as modified by this ESD remains protective of human health and the environment.

SUPPORT AGENCY COMMENTS

NYSDEC, after careful consideration of the modified remedy, supports this ESD, as the modified remedy significantly changes, but does not fundamentally alter, the remedy selected in 2017.

FIVE-YEAR REVIEW

Although, upon completion of remedial activities at the site, hazardous substances will be reduced to levels that will permit unlimited use of, and unrestricted exposure to, the soil as envisioned under its current, anticipated future land use, it is customary for EPA to conduct five-year reviews when remedial activities, including monitoring, will continue for more than five years.

EPA will conduct a discretionary five-year review for this site five years after the completion of the on-Property remediation if the remediation of the off-Property areas has not been completed and the on-Property areas have not been developed with the above-noted mitigation measures. Five-year reviews will continue until the remediation at all portions of the site have been completed or the on-Property areas have been developed with the above-noted mitigation measures, whichever is sooner.

AFFIRMATION OF STATUTORY DETERMINATIONS

EPA is issuing this ESD after consultation with NYSDEC. NYSDEC concurs with the approach presented in this ESD. The remedy, as modified by this ESD, will continue to be protective of human health and the environment and will comply with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action. The modified remedy is technically feasible, cost-effective, and utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the

maximum extent practicable. The modified remedy will not meet the statutory preference for the use of treatment as a principal element of the remedial action because no proven and cost-effective treatment technology is currently available to treat radioactive wastes.

PUBLIC PARTICIPATION ACTIVITIES

Pursuant to NCP §300.825(a)(2), this ESD will become part of the Administrative Record for this supplement to the 2017 remedy. Links to the Administrative Record and other site-related documents can be found on the EPA Site Profile Page at <https://www.epa.gov/superfund/woff-alport>. EPA is making this ESD available to the public to inform them of the changes made to the remedy. Should there be any questions regarding this ESD, please contact:

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With the publication of this ESD, the public participation requirements set out in §300.435(c)(2)(i) of the NCP have been met.

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Pat Evangelista, Director
Superfund and Emergency Management
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Date

