

Technical Memorandum

TO: Carl Bach, The Boeing Company
FROM: Colette M. Gaona and Kristy J. Hendrickson, P.E.
DATE: August 3, 2016
RE: **TSCA Material Characterization and Removal Plan**
North Boeing Field
Seattle, Washington
Project No. 025082.216.001

Introduction

This technical memorandum presents a plan for characterization and removal of material regulated under the US Environmental Protection Agency's (EPA) Toxic Substances Control Act (TSCA) identified at the North Boeing Field (NBF) site during the NBF/Georgetown Steam Plant (GTSP) Remedial Investigation (RI) activities in February and March 2016. TSCA material is characterized as containing total concentrations of polychlorinated biphenyls (PCBs) of greater than or equal to 50 milligrams per kilogram (mg/kg). The materials identified during the NBF/GTSP RI activities as containing total PCBs greater than or equal to 50 mg/kg include concrete joint material (CJM), paint, and caulk at seven sample locations. These sample locations and total PCB results are described in Table 1 and shown on Figure 1. After removal, these materials will be considered PCB bulk product waste and will be disposed of in accordance with 40 C.F.R. § 761.62. Characterization sampling will be performed prior to removal and disposal of these materials as described below.

TSCA Material Characterization

Prior to removal of the TSCA materials identified during the NBF/GTSP RI activities, additional characterization sampling will be performed. Additional characterization sample locations will be selected during a site reconnaissance to identify similar materials near the TSCA sample locations described in Table 1 and shown on Figure 1. Additional characterization sample locations will be selected to determine and delineate the extent of materials containing PCBs exceeding 50 mg/kg at each location.

Following the site reconnaissance, characterization samples will be collected in accordance with the anthropogenic media sampling procedures detailed in the NBF/GTSP RI Sampling and Analysis Plan and Quality Assurance Project Plan (SAP/QAPP; Leidos 2014). A complete record of all field activities will be maintained including field logbooks, field sampling forms, photographs, sample labels, chain-of-custody forms, and project and data management file copies. Samples will be transported to Boeing's contracted analytical laboratory, Analytical Resources Inc., in Tukwila, Washington, within 24 hours of sample collection. All samples will be analyzed for PCB Aroclors by EPA Method 8082. The target laboratory reporting limit for PCB analysis is 800 µg/kg for each Aroclor. Actual reporting limits may be higher or lower depending on laboratory interferences and other Aroclor detections.

Anthropogenic media samples were collected during the RI activities in the areas where surface debris and storm drain solids samples had total PCBs greater than or equal to 50 mg/kg (identified in Table 1). In the area surrounding NL-SFD100, additional building material samples will be collected to aid in identifying the potential source of PCBs to the area associated with the NL-SFD100 sample location. Surface debris and storm drain solids with total PCB concentrations greater than or equal to 50 mg/kg, identified in Table 1, will be removed and disposed of as PCB bulk product waste by Boeing's contractor, Stericycle, in accordance with the procedures described below.

TSCA Material Removal

Upon receipt of the characterization data, a scope of work will be prepared for removal of the TSCA material. Removal methods may vary based on the location, access limitations, characteristics of the material, and site conditions. In general, caulk will be removed using hand tools such as knives, scrapers, and blades to extract the material. CJM removal may include saw cutting, grinding, manual extraction using hand tools, pressure washing, and/or residual scraping. Paint abatement will be accomplished using a paint-stripping agent selected by Boeing's contractor and approved by Boeing prior to the abatement activities. Surface debris and storm drain solids will be removed and disposed of in accordance with Boeing's general facility maintenance and cleaning procedures. Hand tools may be used for removal where street sweepers and vacuum-trucks are not practical due to access limitations.

Runoff control measures will be implemented to capture any wastewater, slurry, or debris generated during removal and/or abatement activities to prevent materials from entering the stormwater drainage system. Control measures that may be implemented include the use of air-powered drum vacuums with particulate filters, dust control mitigation, and catch basin filters. Removal activities will not take place during periods of significant wind and/or rain.

All removed PCB bulk product waste (those materials containing PCBs greater than or equal to 50 mg/kg) will be contained in drums, cubic yard boxes, or lined roll-off boxes and disposed of at a Subtitle D landfill including either the Waste Management NW landfill in Columbia Ridge, Oregon or Wenatchee Regional landfill in Wenatchee, Washington. Bulk product waste that also designates as hazardous waste for other constituents will be disposed of at the Waste Management Subtitle C chemical waste landfill in Arlington, Oregon. Non-disposable and nonporous equipment, such as hand-held removal tools, knives, scrapers, and other small equipment that may come into contact with TSCA waste, will be decontaminated after each use in accordance with the decontamination procedures required under 40 C.F.R. § 761.79, or will be discarded as PCB contaminated waste.

Landau Associates will prepare a removal report documenting the implementation of the TSCA material removal described in this technical memorandum. The report will include the dates during which TSCA material removal was conducted, the approximate volume of material removed, and

figures showing the final removal areas based on the results of the characterization sampling described above.

Health and Safety Plan

The RI Health and Safety Plan (HASP; LAI 2015) will be applicable to the TSCA material characterization and removal activities. All personnel performing the work described in this plan will follow the procedures described in the RI HASP or follow procedures in a HASP that is at least as protective as the one developed for the RI.

Limitations

This technical memorandum has been prepared for the exclusive use of The Boeing Company and applicable regulatory agencies for specific application to the NBF locality. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of Landau Associates. Further, the reuse of information, conclusions, and recommendations, without review and authorization by Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

This document has been prepared under the supervision and direction of the following key staff.

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Attachments

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| Figure 1 | TSCA Material Characterization and Planned Removal Locations |
| Table 1 | Sample Locations with Total PCB Results Greater Than or Equal to 50 mg/kg |

References

LAI. 2015. Health and Safety Plan, Remedial Investigation/Feasibility Study, North Boeing Field/Georgetown Steam Plant, Seattle, WA. February 3.

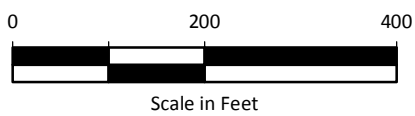
Leidos. 2014. North Boeing Field/Georgetown Steam Plant Site Remedial Investigation/Feasibility Study Final Sampling and Analysis Plan and Quality Assurance Project Plan. April.



Legend

- ✱ Caulk/Foam Sample Location
- + CJM Sample Location
- ★ Paint Sample Location
- Storm Drain Sample Location
- Surface Debris Sample Location
- Site Boundary

SL-PAINT-11 — Sample ID
510 mg/kg — Total PCB Results



Data Source: Google Earth Pro, April 2015.

Notes

1. * = Total PCBs were non-detect at this location with an elevated reporting limit. Another sample will be collected to attempt to get a lower reporting limit from the analytical laboratory.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Table 1
Sample Locations with Total PCB Results Greater Than or Equal to 50 mg/kg
TSCA Characterization and Removal Plan
North Boeing Field
Seattle, Washington

Sample ID	Sample Date	Media	Nearest Building Number	Sample Location Notes	Sample Description	Total PCBs (mg/kg)
NCL-CJM-19-022916	2/29/2016	CJM	Stall B1	CJM in joint near northern edge of stall, north of the newer, replaced concrete panels that are in center of stall	Brownish-red, sticky, oily, flexible CJM	210
NCL-CJM-23-030216	3/2/2016	CJM	Between 3-380 & 3-390	Narrow black CJM in joint, in between Buildings 3-380 & 3-390 (south of Stalls A2/A3), 1 panel west of orange-painted Evacuation Sign for 3-390	Black, hard, thin strip, weathered CJM	64,000
NCL-Paint-13-022916	2/29/2016	Paint	Stall B1	Yellow paint on MH cover of MH248, toward front of Stall B1	Yellow, brittle paint with black coating (dirt) and rust	259
NCL-SFD89-121515	12/15/2015	Surface Debris	Stall A-3 and 3-390	Concrete joints within the MH221A polygon	Moss, paint chips, dirt, sand	110
NL-SFD100-021816	2/18/2016	Surface Debris	Btw 3-368 & Wind Tunnel	Surface debris in between 3-368 and wind tunnel in narrow corridor, just upstream of CB147	Moss, hair, dirt, plastic trash, leaves, paint chips	63
SL-Paint-11-022616	2/26/2016	Paint	3-374	Gray paint on concrete pad for gray condensate tank, north side of 3-374	Very weathered, very brittle gray paint with dirt	510
SL-SFD59-040115	4/1/2015	Surface Debris	3-369/3-374 Building	Between 3-369 and 3-374 buildings	Woody debris, silt, paint chips, dirt	67
SL-SFD80-082415	8/24/2015	Surface Debris	3-374	In breezeway between 3-369 & 3-374; from NW corner of 3-374 building	Paint chips, dirt, leaves, bits of plastic trash, hair, fine sediment	155
3-368-Caulk-03-022616	2/26/2016	Caulk	3-368	Caulk at edge of panel north of (next to) Door W1	Gray, dense, rigid, foam-like caulk; painted w/tan paint	120,000
3-369-Caulk-04-022616	2/26/2016	Caulk	3-369	Caulk between brick and pillar, east side of 3-369, south of Door E6	White, rubbery caulk with light gray paint on surface and red brick dust on bottom	250,000
3-369-Caulk-05-022616	2/26/2016	Caulk	3-369	Caulk around Door E3, east side of 3-369	White, dense, rubbery caulk with gray paint on surface	249,000
3-626-Foam-01-022516	2/25/2016	Foam	6-626	Black foam in four small fan housing circles on south side of building, west of Door S6	Dark brown, dusty foam, brittle on weathered surface	ND *
OWS483E/D-082415-S	8/24/2015	Storm Drain Solids	Stall B-9	OWS483E/D	Silt, sand, sheen (very soupy)	52.2

CJM = concrete joint material
ID = identification
mg/kg = milligrams per kilogram
OWS = oil/water separator
PCB = polychlorinated biphenyls

= Surface debris associated with this sample result was removed and disposed of by Boeing in 2015.

* = Total PCBs were non-detect at this location with an elevated reporting limit. Another sample will be collected to attempt to get a lower reporting limit from the analytical laboratory.