

October 30, 2001 (9:48am)

Final Preliminary Data

New York City/ World Trade Center Sampling Activities
Exchange Place PATH Dewatering 2 (10/10/01 Sample)

Preliminary Results Summary:

Dioxins and Furans: One dioxin and one furan were detected at very low concentrations. The total TEQ for the sample was 0.1 pico grams per liter (pg/L), which is less than the median TEQs determined in NY Harbor during CARP sampling.

(Previously Reported 10/29/01) **Asbestos:** Asbestos was reported as less than 39.17 million fibers per liter (MFL) greater than 10 microns in length. The federal drinking water MCL, the only federal standard for asbestos in water, is 7 MFL.

(Previously Reported 10/18/01) **Biochemical Oxygen Demand (BOD5):** The 5 day BOD was reported as 160 mg/L. This is more than double the 69 mg/L BOD5 detected in the 10/03/01 sample collected at the same location. The value reported is less than the 09/15-16/01 Newtown Creek STP influent of 210 mg/L, and about four (4) times greater than the Newtown Creek STP effluent of 38 mg/L.

(Previously Reported 10/15/01) **Toxicity:** Toxicity was measured in water samples, and samples of solids clarified from the sample and added to seawater. The response can be characterized as low-level toxicity. Following 48 hours of testing, the median lethal concentration (LC50) predicted was 83.5 percent tunnel water. Survival in the undiluted and untreated tunnel water was 32.5 percent. Survival was 97.5 percent or higher in all of the dilutions of the effluent (50, 25, 12.5, and 6.25 percent tunnel water). Toxicity was reduced in the tunnel water that was centrifuged. Survival in this sample was 82.5 percent. However, toxicity was not reintroduced with the solids from the centrifuged sample placed in clean seawater. Survival in this treatment was 97.5 percent. The dilution capacity of the receiving stream and any chemical measurements should be taken into account when evaluating management actions.

(Previously Reported 10/13/01) Available results are similar to the sample collected on 10/03/01. No PCBs were detected. Several VOCs were detected including MTBE, but all concentrations of detected VOCs were less than 100 ug/L. Fourteen NVOAs were detected, primarily phenol and substituted phenols and benzoic acid. Detected PAHs were all at trace concentrations (<10ug/L). Phenol is the only non-PAH NVOA with marine FWQC. The detected concentration is less than the acute marine criteria; chronic criteria does not exist for phenol. Zinc was detected at more than double the marine acute and chronic FWQC. Sulfate and chloride were elevated, but TSS was significantly less than that detected in the 10/03/01 sample. Oil and Grease and TPH were detected at low concentrations.

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Sampling Date: October 10, 2001

Location: Grab samples from direct discharge to the Hudson River.

Sample Matrix: Aqueous

Analytes (Laboratory):

- VOCs (Region 2)
- PCB Congeners (Region 2)
- NVOAs (Region 2)
- Metals + mercury (Region 2)
- BOD5 (Region 2)
- COD (Region 2)
- Aquatic Toxicity (marine Mysids and Minnows) (Region 2)
- TSS (Region 2)
- Total Petroleum Hydrocarbons (Region 2)
- Oil and Grease (Region 2)
- Sulfate (Region 2)
- Chloride (Region 2)
- Salinity (Region 2)
- Dissolved Oxygen (Region 2)
- Residual Chlorine (Region 2)
- Alkalinity (Region 2)
- Ammonia (Region 2)
- Dioxins/Furans (contract lab - Paradigm Analytical)
- Asbestos (contract lab)

Dewatering Activity: The Port Authority of New York and New Jersey (PANYNJ) initiated pumping from the PATH tunnels at Exchange Place under an existing permit (NJ0076988) on September 11, 2001. PANYNJ estimates that discharge averages 2600 GPM. The F tunnel has been plugged since the WTC disaster, and no dewatering is occurring from that tunnel. Dewatering continues from the E tunnel. Pumps are activated by a manual "float switch", and operate between 8 and 12 hours per day. The tunnel is estimated to fill at between 800 - 1200 gpm. NJDEP had been notified of the enhanced discharge, but neither performed sampling or required additional sampling by PANYNJ. EPA learned of the enhanced discharge on October 01, 2001, performed reconnaissance on October 02, and sampled the discharge on October 03. There were no significant contaminant concentrations detected in that sample.

Plugging the PATH tunnel F near Exchange Place will necessitate pumping the tunnel from Manhattan. The plug is expected to be in place by 10/10/01. PANYNJ has suggested that they would prefer to discharge directly to the Hudson River. There does not appear to be an existing NPDES permit for the proposed discharge. EPA was informed on 10/09/01 that the characteristics of the discharge at Exchange Place had changed, and was now "black and smelly". To address this, and to characterize the discharge more fully to assess the expected quality of the proposed discharge from the Manhattan side, EPA re-sampled the discharge at Exchange Place on 10/10/01.

Preliminary Results:

General Characteristics: The samples were brown in color with a strong acrid odor. Some, but not all of the color, was removed through centrifugation. Total ammonia was elevated with a concentration of approximately 8.7 mg/L. Ammonia is not typically encountered at this concentration in marine surface samples. Salinity in the sample was 12 parts per thousand (path., g/L) which is less than the average of 35 g/L salinity of seawater. There was no residual chlorine present. Dissolved oxygen, determined in the laboratory, was 2.5 mg/L, lower than saturation indicating an oxygen demand from the sample. The alkalinity of the sample was approximately 140 mg/L. This concentration is slightly higher than would be predicted for a sample with a balanced salinity of 12 path.

Dioxins/Furans: One dioxin and one furan were detected. OCD was reported at a concentration of 53.2 J pg/L, and 1234678-HpCDF was reported at a concentration of 9.2 pg/L. The Toxic Equivalency (TEQ) for the compounds detected in the sample is 0.1 pg/L. This value is less than median TEQs determined over the last three years by NYSDEC in samples collected during NYNJ Harbor Estuary Contaminant Assessment and Reduction Program (CARP). The median TEQ (n=16) for the eastern NYNJ Harbor is 0.13 pg/L; the TEQ (n = 20) for the western NYNJ Harbor is 1.3 pg/L.

Metals: Several metals were detected that had not been detected in the Hudson River samples or the 10/03/01 PATH Exchange Place sample. Results for these metals is tabulated below. Results for zinc exceed both the marine acute and chronic Federal Water Quality Criteria for this metal. Chromium and nickel were detected at concentrations slightly greater than the detection limit. Concentrations of other metals detected in the sample are similar to those detected in the 10/03/01 PATH tunnel discharge sample. Table 1 at the end of this report provides metals data for all non-drinking water WTC disaster samples collected by EPA.

Metal	Concentration (ug/l)	Marine Acute FWQC (ug/l)	Marine Chronic FWQC (ug/l)
Chromium	8.4	1100*	50*
Nickel	6.8	75	8.3
Zinc	210	95	86

* FWQC for Chromium VI, most stringent chromium criteria.

PCB Congeners: The sample was analyzed for 71 PCB congeners. No PCBs were detected in the sample (DL 0.0054 ug/L).

NVOAs: Seven (7) non-PAH NVOAs were detected in the sample. Seven PAHs, most substituted naphthalenes, were also detected, but all at trace concentrations (< 10ug/L). Results are tabulated below. Benzoic acid was detected at the highest concentration (580 ug/L), followed by phenol and several substituted phenols.

Phenol is the only detected NVOA having established marine acute FWQC. Marine chronic criteria has not been established for phenol. The concentration detected in the PATH tunnel effluent is more than 10 times less than the marine acute FWQC. Proposed acute and chronic FWQC for 2,4,5-trichlorophenol were also not exceeded in the sample.

Compound	Concentration (ug/l)	Marine Acute FWQC (ug/l)	Marine Chronic FWQC (ug/l)
Benzoic Acid	580	NA	NA
Phenol	450	5,800	NA
4-Methyl Phenol	110	NA	NA
2 - Methyl Phenol	67	NA	NA
Benzyl Alcohol	53	NA	NA
2, 4- Dimethyl Phenol	53	NA	NA
2,4,5-Trichlorophenol	5.2	240 p	11 p

NA: No marine FWQC

p: Proposed Criteria

VOCs: The sample was analyzed for VOCs including MTBE and trichlorofluoromethane (freon-11). Acetone (90 ug/L), methylene chloride (17 ug/L), 2-butanone (21ug/L), toluene (18 ug/L), meta and para xylenes (10 ug/L), MTBE (65 ug/L), and total xylenes (10 ug/L) were detected. No VOCs were detected in the trip blank. Results are similar to those in the 10/03/01 sample, except for the detection of MTBE which is generally associated with oxygenated fuels.

Toxicity: Toxicity testing was performed by the USEPA Region II laboratory on the Tunnel Water Discharge to the Hudson River using a small marine crustacean, *Mysidopsis bahia* (Mysid) and a juvenile/larval fish species, *Menidia beryllina* (Inland Silversides Minnow). The tests were 48- Hour exposures and the test endpoint was mortality.

Mysids were more sensitive to the tunnel water than the fish. Following 48 hours of testing, the median lethal concentration (LC50) predicted was 83.5 percent tunnel water. Basically, if 83.5 percent tunnel water was mixed with 16.5 percent clean seawater, then 50 percent of the organisms would not survive. Survival was 97.5 percent or higher in all of the dilutions of the effluent (50, 25, 12.5, and 6.25 percent tunnel water).

Toxicity was reduced in the tunnel water that was centrifuged. Survival in this sample was 82.5 percent. Survival in the undiluted and untreated tunnel water was 32.5 percent. However, toxicity was not reintroduced with the solids from the centrifuged sample placed in clean seawater. Survival in this treatment was 97.5 percent.