North Atlantic

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The Northeast Utilities System

August 11, 1999

NPDES Permit NH0020338
NYE-99017

Ref: AR#97001236-04
NYE-98012
NYE-98021
NYE-98031

United States Environmental Protection Agency
Region I
Attn.: John P. DeVillars, Regional Administrator
c/o Shelly B. Puleo, Environmental Protection Specialist
Municipal Assistance Unit
Office of EcoSystem Protection
John F. Kennedy Federal Building
Boston, Massachusetts 02203-0001

Seabrook Station
Third Supplement to NPDES Permit Renewal Application

North Atlantic Energy Service Corporation (NAESCO) hereby submits, pursuant to 40 CFR 122.21(d), a third supplement to its April 23, 1998[1], application to renew National Pollutant Discharge Elimination System (NPDES) Permit No. NH0020338 for Seabrook Station, a nuclear electric generating facility located in Seabrook, NH.

At Seabrook Station, plant discharges to the ocean environment are through the cooling water system discharge transition structure (NPDES Outfall 001). A number of streams that flow to Outfall 001 are also identified and controlled in the permit. The purpose of this supplement is to provide additional information on these input streams and to request an increased permit limit for a chemical used in the Makeup Water Treatment System and discharged to Outfall 001. The limit requested is well below aquatic toxicity limits. This supplement also contains a revision to the Clean Water Act 316(b) Certification to reflect receipt of a Letter of Authorization from the National Marine Fisheries Service for the taking of seals incidental to the operation of Seabrook Station. The mitigation, monitoring and reporting requirements are addressed in this supplement as well as our plans to install a seal deterrent barrier.

[1] North Atlantic Energy Service Corporation letter NYE-98012, dated April 23, 1998, "NPDES Permit Renewal Application" Mr. Ted C. Feigenbaum (North Atlantic) to Mr. John P. DeVillars.

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Enclosure 1 contains a description of the changes in the permit application being submitted by Supplement 3. Enclosure 2 provides Supplement 3 revised pages for insertion into the original application. Finally, Enclosure 3 provides a copy of the MSDS for the Makeup Water Treatment System chemical.

If you have any questions, please call John Hart, Manager of Environmental Compliance and Industry Relations at (603) 773 7762.

Very truly yours,

NORTH ATLANTIC ENERGY SERVICE CORP.

Ted C. Feigenbaum
Executive Vice President and
Chief Nuclear Officer

Certification pursuant to 40 CFR 122.22(d)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Ted C. Feigenbaum
Executive Vice President and Chief Nuclear Officer

August 11, 1999
Date

STATE OF NEW HAMPSHIRE

Rockingham, ss.

Then personally appeared before me, the above-named Ted C. Feigenbaum, North Atlantic Energy Service Corporation, that he is duly authorized to execute and file the foregoing information in the name and on the behalf of North Atlantic Energy Service Corporation and that the statements therein are true to the best of his knowledge and belief.

Susan J. Messer, Notary Public
My Commission Expires: December 2, 2004

August 11, 1999
Date

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ENCLOSURE 1 TO NYE-99017

Description and Discussion of Changes Requested in Seabrook Station's
NPDES Permit in Supplement 3 to the Application

Description and Discussion of Changes Requested in Seabrook Station's NPDES Permit in Supplement 3 to the Application

This supplement makes the following changes to the April 23, 1998 NPDES Permit Renewal Application:

1. Addition of Boron as a Potential Chemical in the Discharge from Outfall 025C (Waste Holdup Sump)

2. Addition of Boron as a Proposed Chemical for Future Discharge from Outfall 025A (Steam Generator Blowdown) and Outfall 025C (Waste Holdup Sump)

3. Additional Source of Wastewater, Outfall 024 (Oil/Water Separator Vault #3)

4. Addition of Antiscalant Hypersperse AS 120 as a Chemical in the Discharge From Outfall 001 (Circulating Water System)

5. Updated Clean Water Act 316 (b) Certification, Includes Information Regarding Seal Limited Take Permit

Application changes 1,2 and 3 above would not constitute a change in the currently permitted levels of chemical discharges to the environment via Outfall 001. They would document additional input streams (Outfall Discharges) of chemicals to Outfall 001 that are currently permitted. Change #4 reflects the use of a new product and an increased Outfall 001 limit for an anti-scalant being used in the Makeup Water Treatment System. Application Change 5 provides an update to the Clean Water Act 316 (b) Certification. It reflects the recently received Letter of Authorization (LOA) from the National Marine Fisheries Service for the taking of a limited number of seals incidental to the operation of the station and the mitigation, monitoring and reporting conditions required by the LOA.

1. Addition of Boron as a Potential Chemical in the Discharge from Outfall 025C (Waste Holdup Sump)

The current NPDES Permit for Seabrook Station authorizes the discharge of boron at concentrations not exceeding 5 parts per million (ppm) at Outfall 001. No change in the NPDES Permit limit for boron is being requested in the NPDES Permit renewal application. As identified in the Fact Sheet for the current NPDES Permit and the NPDES Permit renewal application discharge description for Outfall 025D (p.179), boric acid is used to control the fission process. The following paragraphs describe an additional plant process where boron is used leading to its presence in a wastewater stream. Discharges associated with this application are from Outfall 025C and ultimately to Outfall 001 and are in conformance with the current NPDES Permit limit for boron.

The Waste Holdup Sump (Outfall 025C) may contain acid or caustic wastewater resulting from the process of regenerating the Steam Generator Blowdown System Demineralizer resins. To protect equipment in the Waste Holdup Sump, the regeneration wastewater is neutralized prior to discharge pursuant to a Hazardous Waste Limited Permit issued by the New Hampshire Department of

Environmental Services on December 30, 1998. The caustic (sodium hydroxide) used for neutralization and discharged from Outfall 025C may contain boron as explained below.

Some of the sodium hydroxide used for neutralization of the Waste Holdup Sump has been accumulated from the drainage or flushing of plant systems. One such source is flush water from the interconnecting piping between the Spray Additive Tank, which contains sodium hydroxide and demineralized water, and the Refueling Water Storage Tank, which contains boron and demineralized water. This line is flushed after quarterly motor operated valve testing to preclude the introduction of sodium hydroxide into the Refueling Water Storage Tank. As a result, there may be small amounts of boron in the Outfall 025C discharge although well within Outfall 001 limits.

2. Addition of Boron as a Proposed Chemical for Future Discharge from Outfall 025A (Steam Generator Blowdown) and Outfall 025C (Waste Holdup Sump)

The current NPDES Permit for Seabrook Station authorizes the discharge of boron at concentrations not exceeding 5 parts per million (ppm) at Outfall 001. No change in the NPDES Permit limit for boron is being requested in the NPDES Permit renewal application. As identified in the Fact Sheet for the current NPDES Permit and the NPDES Permit renewal application discharge description for Outfall 025D (p. 179), boric acid is used to control the fission process. The following paragraphs describe an additional process where boron is expected to be used in the future that would lead to its presence in a wastewater stream.

Control of corrosion products in Seabrook Station's steam generators is vitally important to plant reliability. A key strategy being used by operators of other Pressurized Water Reactors to minimize corrosion deposit build-up is the addition of boric acid to the secondary system. This provides a chemical environment that allows for solubilization of these deposits and their resultant removal in the steam generator blowdown system. The use of boric acid for this purpose is, in fact, a recommendation of the Electric Power Research Institute (EPRI) Pressurized Water Reactor Secondary Chemistry Guidelines. Although North Atlantic has not yet used boric acid for this purpose, it is considering this option for the future.

Discharges associated with this future application would be from Outfall 025A and Outfall 025C and ultimately to Outfall 001. The discharges are estimated to be well within the current NPDES Permit limits for boron. For discharges from Outfall 025A, the discharge concentration of boron at Outfall 001 is estimated to be 0.05 ppm (assumes a Circulating Water System flow of 190,000 gpm and an Outfall 025A flow rate of 400 gpm with a boron concentration of 20 ppm). For discharges from Outfall 025C, the discharge concentration of boron at Outfall 001 is estimated at 0.09 ppm (assumes a Circulating Water flow of 190,000 gpm, Outfall 025C flow of 150 gpm, Outfall 025C sump volume of 20,000 gallons, a boron concentration in the sump of 114 ppm and an anion resin capacity of 1.4 meq/ml of resin). It is also important to note that discharges from steam generator blowdown to the environment are intermittent. Normally blowdown is contained in a closed loop system without discharge to the environment. Blowdown flow is normally processed through demineralizers and returned to the steam generators. When the demineralizers are unavailable during resin regeneration, blowdown flow from the steam generator is directed to Outfall 001.

3. Additional Source of Wastewater, Outfall 024

Outfall 24 (Oil/Water Separator Vault #3) and its associated Discharge Limitations and Monitoring Requirements are specified in the current NPDES Permit. No changes to the Discharge Limitations or Monitoring Requirements for Outfall 024 are being requested in the NPDES Permit renewal application. The NPDES Permit renewal application specifically describes the sources of wastewater which are processed by Oil/Water Separator Vault #3. An additional source of wastewater from the Vehicle Maintenance Shop has been identified.

The facilities at Seabrook Station include a Vehicle Maintenance Shop. This facility is equipped with a simple drainage collection system in which the floor drains and a sink drain are routed to a holding sump. Gray water from the wash sink and potentially oily floor drainage water are collected by this sump. Drainage collected by the Vehicle Maintenance Shop Sump is manually transferred to Oil/Water Separator Vault #3 for processing.

4. Addition of Antiscalant Hypersperse AS 120 as a Chemical in the Discharge From Outfall 001 (Circulating Water System)

Seabrook Station utilizes a leased makeup water treatment system (MWTS) to supply the demineralized water requirements of the station. The MWTS was placed into service in 1994 and was recognized in the application for the current NPDES Permit (see Response to Public Comments, Appendix A, dated September 27, 1993). The MWTS employs ultrafine filtration and reverse osmosis technology. The wastewater from the MWTS is discharged to the Circulating Water System (Outfall 001). The current NPDES Permit identifies that a sequestering agent, Flocon, would be used in the MWTS to control scale precipitates within the MWTS membranes. The current NPDES Permit specifies a discharge concentration limit of .01 ppm for Flocon (Ref: NPDES Permit Part I.A.1.o). It was recently identified that Flocon has not been used in the MWTS, instead the product Hypersperse AS 120 (Hypersperse) has been utilized as the scale control agent. North Atlantic desires to continue the use of Hypersperse in the future, however until such time that the permit is revised to authorize the discharge of Hypersperse, Flocon will be used in the system. Hypersperse is a liquid antiscalant product identical in function and similar in composition to the antiscalant product Flocon. Discharge concentrations of the product Hypersperse have been less than .01 ppm at Outfall 001. Hypersperse does not contain any of the listed toxic pollutants identifed in 40 CFR 401.15 nor have discharge concentrations exceeded the NPDES Permit notification level (.1 ppm) for the discharge, on a routine or frequent basis, of any toxic pollutant (Ref: NPDES Permit Part I.A.1.i).

The NPDES Permit renewal application requests a change to the NPDES Permit to identify Hypersperse as the antiscalant product used in the MWTS. Additionally it is requested that the discharge limit for Hypersperse be set at .5 ppm. Aquatic toxicity information is provided below in support of the use of Hypersperse and the proposed .5 ppm limit.

The NPDES Permit Limit for Flocon is 0.01 ppm at Outfall 001. This limit was established based on North Atlantic's estimation of the concentration of Flocon present in the discharge transition structure after dilution by the Circulating Water System. North Atlantic requests approval to discharge Hypersperse at a concentration of 0.5 ppm. The requested increase will allow the station to operate the MWTS when the demand for demineralized water is the highest without risking degradation of system equipment.

Refueling outage periods usually present the highest demand for demineralized water because system draining and filling operations are being conducted in support of equipment maintenance and preservation activities. During a refueling outage, Circulating Water System flow is typically secured for about two weeks for maintenance of equipment and cleaning of the forebays. During these outage periods, Hypersperse cannot be used in the MWTS because the lack of Circulating Water flow and consequent low dilution would cause the .01 ppm limit to be exceeded. The proposed discharge concentration of 0.5 ppm is well below toxicity limits and would allow operation of the MWTS when water demand is high and Circulating Water is secured without risking equipment degradation

Aquatic toxicity information for Flocon and Hypersperse is provided below.

Aquatic Toxicity

Flocon

Daphnia magna, 48 hour EC50*: > 1000 mg/l
Mysid shrimp, 96 hour LC50: > 500 mg/l
Sheepshead minnow, 96 hour LC50 = 600 mg/l
Algae (*Selanastrum capricornutum*), 72 hour EC 50: 232.3 ppm

Hypersperse

Marine copepod (*Acrtia ionsa*), 48 hour LC50: > 1000 mg/l
Daphnia magna, 48 hour EC50: > 200 mg/l
Zebra fish, 96 hour LC50: > 200 mg/l

* "EC50" means a statistically or graphically estimated concentration that is expected to cause 1 or more specified effects in 50% of a group of organisms under specified conditions.

The Material Safety Data Sheet (MSDS) for Hypersperse is provided as Enclosure 3.

5. Updated Clean Water Act 316 (b) Certification, Includes Information Regarding Seal Limited Take Permit

At the time that the Clean Water Act 316 (b) Certification was initially submitted as part of the NPDES Permit renewal application, North Atlantic's Small Take Exemption Permit application, submitted in June 1997 under the Marine Mammal Protection Act, was still pending before the National Marine Fisheries Service. The final rule regarding Seabrook Station's Small Take Exemption Permit was published in the Federal Register on May 25, 1999. This rule became effective on July 1, 1999. The National Marine Fisheries Service issued a Letter of Authorization (LOA) setting forth a number of implementing conditions on July 2, 1999. The rule and LOA authorize the unintentional take of a small number of seals incidental to the routine operation of Seabrook Station.

The LOA limits the annual number of seal takes incidental to the operation of Seabrook Station to 20 harbor seals and four of any combination of gray, harp and hooded seals. It requires North Atlantic to report its plans to mitigate impacts on seals to the NMFS by January 1, 2000, and to implement

such plans no later than 42 months from the issuance of the rule. It also sets forth requirements for monitoring and reporting.

North Atlantic is proceeding with its plans to install a seal deterrent barrier well in advance of the rule's requirements. North Atlantic provided details of its plans in a letter to the EPA and NMFS in May 1999[2].

The seal deterrent barrier will be an enhancement to the existing cooling water system intake that will reduce the vertical bar spacing around each intake from about 14.5 to about 4 inches. Experiments conducted at the New England Aquarium indicate that this spacing should prevent even determined seals from entering the intakes. The barriers consist of pre-fabricated panels made out of the same copper-nickel metal alloy as the existing bars. The barriers will have no impact on any of the functions of Seabrook Station's Cooling Water System. It will have no adverse environmental consequences and will not impact any of the parameters controlled or limited by the National Pollutant Discharge Elimination System (NPDES) permit.

[2] North Atlantic Energy Service Corporation letter NYE-99013, dated May 25, 1999, "Seal Deterrent Barrier," J. Hart (North Atlantic) to C. DeLoi (EPA) and J. Rittgers (NMFS)

ENCLOSURE 2 TO NYE-99017

Supplement 3 Revised Pages for Insertion Into the Seabrook Station NPDES Renewal Application

- Diisopropylamine - trace quantities from sodium analyzer drains
- Sodium Chloride - Water treatment plant chemical additive, SGBD EDI cleaning agent.
- Sodium Hydroxide - Water treatment plant cleaning agent, CPS regenerant chemical.
- Suspended solids - all potential inputs to the discharge
- Citric Acid - trace quantities from silica analyzer drains
- Silica standard (500ppb) - trace quantities from calibration of silica analyzers
- Ammonium molybdate - trace quantities from silica analyzer drains
- Amino Acid - trace quantities from silica analyzers
- Hydrochloric acid - SGBD EDI cleaning agent
- Chlorhexidine Di-Gluconate (Hydrosep) - emergency eyewash station biological growth inhibitor
- Sulfuric Acid - CPS regenerant chemical.
- Bulab 9328- Corrosion inhibitor for freshwater systems (used on auxilliary cooling tower previously)
- Bulab 6002- Biocide for fresh water systems (used on auxilliary cooling tower previously)
- Acetaldehyde- potential breakdown product of ethanolamine, all sources of ethanolamine
- Acetic acid- potential breakdown product of ethanolamine, all sources of ethanolamine
- Diethylamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Dimethylamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Monoethylamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Monomethylamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Triethanolamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Trimethylamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Acrylonitrile- potential breakdown product of methoxypropylamine, all sources of methoxypropylamine
- Cresol- trace quantities from cleaning products, petroleum containing products
- Phenol- trace quantities from cleaning products
- ~~Flocon- flocculent used in the Water Treatment System for removal of particulates~~ Supp. 3
- Morpholine- Secondary chemical additive, Steam Generator soak agent, hotwell discharges
- Sodium thiosulfate- Water Treatment System additive for chlorine removal
- Hypersperse - Antiscalant used in the Makeup Water Treatment System Supp. 3

Proposed chemicals for future discharge:

- Chemicals identified in all other outfalls .

Note: Some of the chemicals listed below are also listed in other outfalls. They are listed below because they are also discharged directly into this outfall.

- Pyrolidine - Secondary chemical additive
- Carbohydrazide - Secondary and closed cooling loop additive
- Dimethylamine - Secondary chemical additive
- 5-aminopentanol - Secondary chemical additive
- 1,2 diaminoethane - Secondary chemical additive
- 3-hydroxyquinuclidine - Secondary chemical additive
- 2-amino,2-methylpropanol - Secondary chemical additive
- EDTA - Steam Generator and Generator Stator Coolant System cleaning agent
- EVAC Biocide - Under consideration for mollusk control in the Circulating Water System
- H-130M Biocide - Under consideration for mollusk control in the Circulating Water System
- Thruguard 300 - Under consideration to be used as an additive to the sodium hypochlorite injection line to reduce calcium carbonate scale formation.
- Diethylhydroxylamine- Secondary chemical additive

- Steam Generator scale conditioning agents containing one, or more, lower alkyl amines and/or lower alkanol amines, combined with one, or more cyclic imines. These Steam Generator scale conditioning agents may be used during outages. The scale removal process employs the use of a vendor demineralizer skid which is expected to remove all but trace quantities of these chemicals.

Note: This page is provided for pagination purposes only

Discharge Information for Outfall 024
Oil/Water Separator Vault #3

EPA Form 2C
Section II, Flows, Sources of Pollution and Treatment Technologies
Part B, Description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater.
SectionV, Intake and Effluent Characteristics
Part V.D, List of Pollutants from Form 2C, Tables 2C-3 and 2C-4

Discharge includes wastewater from the following sources:

- Fire Protection Pumphouse Drains
- Fire Protection Diesel Pump Fuel Oil Tank areas
- Auxiliary Boiler Fuel Oil Storage Tank area
- Vehicle Maintenance Shop Sump

Supp. 3

Discharge description:

The Floor Drainage Oil/Water Separation System is designed to process non-corrosive oily and potentially oily drainage and leakage sources to produce an effluent containing less than 15 mg/L oil content which conforms to the Effluent Guidelines and Standards set forth by the EPA in 40 CFR 423 for the Steam Electric Power Generating Point Source Category. The processed effluent is discharged to the Storm Drainage System (Outfall 002B) and ultimately to the Circulating Water System (Outfall 001).

The Oil/Water Separation System is comprised of an oil separator, which contains a gravity settling section to which the oil/water streams are piped, and a tilted plate separator section to effect separation of oil from water. An effluent tank with a pump and a coalescing filter are also provided. The filter is utilized for final polishing of the effluent prior to discharge. Operation of the Oil/Water Separation System is initiated upon reaching a setpoint level in the effluent tank.

Each separator is designed to process water with an oil content less than 1500 mg/L and discharge a maximum of 85 gpm (122,400 gpd). The gravity settling section is provided to limit suspended solid loading into the oil separation section to 20 ppm. The down flow tilted plate separator is designed to process an oil/water solution and produce an effluent with an oil concentration conforming to EPA effluent guidelines. The final polishing coalescing filter is included in the event that separator loadings exceed design values. This filter can reduce the oil content from about 15 mg/L to less than 10 mg/L. Separated oil is collected in the oil holding tank and is removed periodically. Settled solids in the gravity separator are likewise removed.

Oil/Water Separator Vault #3 is located in the yard area below grade north of the fire pumphouse. The location of the separator is sufficiently deep to prevent the freezing of the water at low or no-flow conditions. The vault housing the oil separator, sump and filter is covered to protect the system from the environment. The vault is vented by natural circulation. Electrical equipment and lighting in the vault area are explosion proof.

Oil Water Separator Vault #3 processes influents from the Fire Protection pumphouse drainage trench, Auxiliary Boiler Fuel Oil Storage Tank area, and the diesel fire pump fuel oil day tank areas. There can be leakage of sodium hypochlorite, which is added to the fire protection water as a biocide. Additional sources of leakage are distilled water condensing on the steam heater as well as lubricating and fuel oil from the diesel engines. Effluent from the fire pumphouse floor and hub drains, and the curbed area for the fuel oil day tank (Tank 35A) is collected and piped to Collection Sump #4. This sump is designed to contain a tank rupture. From there it is discharged to Oil/Water

Separator Vault #3. Effluent from the curbed area around the fuel oil day tank (Tank 35B) drains to a separate sump which is also directly connected to Oil/Water Separator Vault #3.

Additionally, oil/water Separator Vault #3 receives water from the Vehicle Maintenance Shop Sump consisting of gray water from a wash sink and potentially oily floor drainage water. Supp. 3

cycle if there is not enough Acid or Caustic available to complete a cycle or if the level in the Waste Holdup Sump is above a setpoint level.

Upon completion of the regeneration the demineralizer resin beds are rinsed with Steam Generator blowdown water or demineralized water. The rinse water is sampled to ensure compliance with the NPDES Permit effluent limitations and monitoring requirements for Outfall 025B. The rinse water is ultimately directed to Outfall 001. Before the demineralizer beds are placed in service, a pre-service rinse of the beds is performed with the waste water being directed to the Turbine Building Sump. The pre-service rinse water is processed by Oil/Water Separator Vault #1 (Outfall 022). Upon completion of the pre-service rinse the demineralizer is placed in service with its discharge directed to the main condenser for reuse in the Condensate System.

Alternate paths for this discharge:

- Waste Holdup Sump (025C)
- Waste Test Tank (s) (025D)
- Turbine Building Sump
- Storm Drains (if no beta/gamma radioactivity detected)
- Auxiliary Turbine Building Sump (holding only - not discharged)
- Unit II Circulating Water System forebay (holding only - not discharged)

Potential chemicals in discharge:

- Ammonia/Ammonium hydroxide - Secondary chemical additive (from thermal decomposition of hydrazine), Steam Generator drainage
- Methoxypropylamine - Secondary chemical additive, Steam Generator drainage
- Hydrazine - Secondary chemical additive, Steam Generator drainage
- Suspended solids - particulates from all inputs
- Ethanolamine - Secondary chemical additive, Steam Generator drainage
- Morpholine- Seocndary chemical additive, Steam Generator soak agent
- Acetaldehyde- potential breakdown product of ethanolamine, all sources of ethanolamine
- Acetic acid- potential breakdown product of ethanolamine, all sources of ethanolamine
- Diethylamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Dimethylamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Monoethylamine- potential breakdown product of ethanolamine, all scurces of ethanolamine
- Monomethylamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Triethanolamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Trimethylamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Acrylonitrile- potential breakdown product of methoxypropylamine, all sources of methoxypropylamine

Proposed chemicals for future discharge:

- Pyrolidine - Secondary chemical additive
- Dimethylamine - Secondary chemical additive
- 5-aminopentanol - Secondary chemical additive
- 1,2 diaminoethane - Secondary chemical additive
- 3-hydroxyquinuclidine - Secondary chemical additive
- 2-amino,2-methylpropanol - Secondary chemical additive
- EDTA - Steam Generator cleaning agent
- Diethylhydroxylamine- Secondary chemical additive

- Carbohydrazide- Secondary chemical additive
- Boron - Secondary chemical additive

Supp. 3

- **Steam Generator scale conditioning agents containing one, or more, lower alkyl amines and/or lower alkanol amines, combined with one, or more cyclic imines. These Steam Generator scale conditioning agents may be used during outages. The scale removal process employs the use of a vendor demineralizer skid which is expected to remove all but trace quantities of these chemicals.**

Discharge Information for Outfall 025(C)
(Waste Holdup Sump)

EPA Form 2C
Section II, Flows, Sources of Pollution and Treatment Technologies
Part B, Description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater.
SectionV, Intake and Effluent Characteristics
Part V.D, List of Pollutants from Form 2C, Tables 2C-3 and 2C-4

Discharge includes wastewater from the following sources:

- Rinse water from demineralizer flushes. Rinse water is directed from the effluent of the demeralizer(s) to either the Waste Holdup Sump or directly to the Circulating Water System (Outfall 001). These rinses are required following regeneration of the demineralizer beds or pre-service rinses of the demineralizer beds. The rinse water source may be Steam Generator Blowdown water or demineralized water.

- Fluid used during the regeneration of the demineralizer beds. The fluid is directed into the Waste Holdup Sump and then discharged to the Waste Liquid System which discharges to the Circulating Water System (Outfall 001). This wastewater contains acid and caustic wastes from the regeneration process as well as ionic constituents present on the resin from loading. This wastewater may be neutralized prior to discharge Supp. 3

- Drainage from the Steam Generator Blowdown System Recovery Subsystem room drains. This may include acid and caustic waste from system leakage and drainage for maintenance, eyewash drains from the room containing demineralized water and biocide, Steam Generator water from system component leakage, sample system drains, and floor wash water.

- Drainage from nearby systems for maintenance outages may also be directed to the Waste Holdup Sump. These include drainage from ocean water systems, the Primary Component Cooling Water System, the Potable Water System, and the Demineralized Water System.

- Drainage of the Steam Generators may also be directed to this sump if other paths are not available.

- Auxiliary Steam System relief valves

Discharge description:

Outfall #025 is a combination of four discrete waste streams which are individually sampled to ensure compliance with NPDES Permit effluent limitations and monitoring requirements. This NPDES Permit renewal application proposes to create individual outfall designations for each of the four discrete waste streams with monitoring requirements and effluent limitations commensurate with the composition of the waste stream. The four proposed outfall designations are as follows:

025A - Steam Generator Blowdown
025B - Steam Generator Blowdown Demineralizer Rinses
025C - Waste Holdup Sump
025D - Waste Test Tanks and Recovery Test Tanks

The following description is for 025C Steam Generator Blowdown Waste Holdup Sump only. Because portions of the other 025 outfalls interface with 025C, they are also briefly discussed.

Support equipment is needed to regenerate the resins in the Steam Generator Blowdown System recovery subsystem demineralizers. The basic regeneration equipment consists of an Acid Skid, a Caustic Skid and the Waste Holdup Sump.

Sulfuric acid is used to reactivate the Cation (positive ion) resin beads within the mixed-bed demineralizers and the lead cation bed demineralizer. Sodium hydroxide is used to reactivate the Anion (negative ion) resin beads within the mixed-bed demineralizers. ***Following a cation bed regeneration, the contents of the sump may be acidic with pH less than 2.*** To protect equipment in the Waste Holdup Sump, neutralization may be performed pursuant to Hazardous Waste Limited Permit DES-HW-LP-98-008 issued December 30, 1998. The Waste Holdup Sump transfers liquids to the Waste Liquid System for direct discharge to the Circulating Water System (Outfall 001) or to either of the Chemical Drain Treatment Tanks which are directed to the Waste Test Tanks (Outfall 025D). Manual startup of this process is needed to initiate the regeneration cycle. After the process is started the remainder is automatically sequenced. The entire regeneration process can be manually controlled. Interlocks ensure that only one mixed-bed demineralizer is regenerated at a time. Interlocks will also stop the regeneration cycle if there is not enough acid or caustic available to complete a cycle, or if the level in the Waste Holdup Sump is above a setpoint level

Supp. 2

Supp. 3

The Steam Generator Waste Holdup Sump is a 30,000 gallon sump designed to contain fluids from the regeneration of the demineralizer beds. It is a concrete sump lined with Plasite™ liner. The sump also captures some of the floor drains from the demineralizer room. The sump is normally directed to the Waste Liquid System for direct discharge to the Circulating Water System. ***It is sampled once prior to or during batch discharge for oil and grease and total suspended solids. The relatively low flow volume of the discharge and the buffering action of the seawater ensures that all pH limits at Outfall 001 are met.*** The sump may also be discharged to the Chemical Drain Treatment Tanks which are directed to the Waste Test Tanks. There is a recirculation system on the sump which allows for mixing and sampling prior to discharge. This recirculation system also contains components which remove larger suspended solids. The maximum discharge rate for the Waste Holdup Sump is 75 gpm.

Supp. 2

Alternate paths for this discharge:

- Waste Test Tank(s) (025D)
- Turbine Building Sump
- Storm Drains (if no beta/gamma radioactivity detected)
- Turbine Building Auxiliary Sump - (holding only - no discharge)

Potential chemicals in discharge:

- Any chemicals listed in outfalls Steam Generator Blowdown (025A) and Steam Generator Blowdown demineralizer Rinses (025B)

Note: Some of the chemicals listed below are also listed in outfalls 025A and 025B. They are listed below because they are also directly discharged into this outfall.

- Ammonia/Ammonium hydroxide - Secondary chemical additive (from thermal decomposition of hydrazine), Primary Component Cooling water drainage, Steam Generator drainage, sample system waste, trace quantities from silica analyzer cleaning
- Methoxypropylamine - Secondary chemical additive, Steam Generator drainage, sample system waste

- Hydrazine - Secondary chemical additive, Steam Generator drainage, Primary Component Cooling Water System drainage, sample system waste
- Suspended solids - particulates from all potential inputs
- Ethanolamine - Secondary chemical additive, Steam Generator drainage, sample system waste
- Total Residual Chlorine - Ocean cooling water system leakage and drainage, fire protection water
- Diisopropylamine - trace quantities from sodium analyzer drains
- Sodium Hydroxide - Regeneration of demineralizer beds, leakage from caustic skid, drainage of system components for maintenance
- Sulfuric acid - Regeneration of demineralizer beds, leakage from acid skid, drainage of system components for maintenance
- Domestic water constituents (washing, hydrolazing, cooling water, fire protection, potable)
- Chlorhexidine Di-Gluconate (Hydrosep) - emergency eyewash station biological growth inhibitor
- Morpholine - Secondary chemical additive, Steam Generator soak agent
- Acetaldehyde- potential breakdown product of ethanolamine, all sources of ethanolamine
- Acetic acid- potential breakdown product of ethanolamine, all sources of ethanolamine
- Diethylamine- potential breakdown product of ethanolamine, all sources of etnanolamine
- Dimethylamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Monoethylamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Monomethylamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Triethanolamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Trimethylamine- potential breakdown product of ethanolamine, all sources of ethanolamine
- Acrylonitrile- potential breakdown product of methoxypropylamine, all sources of methoxypropylamine
- Cresol- trace quantities from cleaning products
- Phenol- trace quantities from cleaning products
- Sodium hypochlorite- Chemical additive to fire protection system, Circulating Water system, Service Water system, and cleaning solutions
- Morpholine- Steam generator drainage, secondary system leakage and drainage
- Citric Acid - trace quantities from silica analyzer drains
- Silica standard (500ppb) - trace quantities from calibration of silica analyzers
- Ammonium molybdate - trace quantities from silica analyzer drains
- Amino Acid - trace quantities from silica analyzers
- Styrene- potential from resin degredation
- Epichlorohydrin- very limited potential from rinses of new resins
- Sodium fluoride- trace quantities from sodium analyzer cleaning
- Boron - may be present in some sodium hydroxide used for Waste Holdup Sump neutralization. Discharges will comply with Outfall 001 limit for Boron. Supp. 3

Proposed chemicals for future discharge:

- Any chemicals listed in outfalls Steam Generator Blowdown (025A) and Steam Generator Blowdown demineralizer Rinses (025B)

Note: Some of the chemicals listed below are also listed in outfalls 025A and 025B. They are listed below because they are also directly discharged into this outfall.

- Pyrolidine - Secondary chemical additive

- Dimethylamine - Secondary chemical additive
- 5-aminopentanol - Secondary chemical additive
- 1,2 diaminoethane - Secondary chemical additive
- 3-hydroxyquinuclidine - Secondary chemical additive
- 2-amino,2-methylpropanol - Secondary chemical additive
- (authorized for discharge in current NPDES Permit at .1 ppm)
- EDTA - Steam Generator cleaning agent
- Carbohydrazide- Secondary chemical additive, Primary Component Cooling Water system additive
- Diethylhydroxylamine- Secondary chemical additive
- Boron - Secondary chemical additive

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- **Steam Generator scale conditioning agents containing one, or more, lower alkyl amines and/or lower alkanol amines, combined with one, or more cyclic imines. These Steam Generator scale conditioning agents may be used during outages. The scale removal process employs the use of a vendor demineralizer skid which is expected to remove all but trace quantities of these chemicals.**

Potential alkyl amines and alkanol amines:

~~o.n~~. The following chemicals are approved for water discharge. These discharge levels may not be increased nor chemicals substituted without written approval by the Regional Administrator and the Director or their designees. The permittee must demonstrate that the aquatic toxicity of the proposed changes are equal to or less than approved chemicals herein listed.

Product	Calculated Maximum Discharge #001 Concentration, ppm	Plant Water System	
Hydrazine	0.5	Secondary Steam System	
Ammonia	0.5	Secondary Steam System	
Supp. 3Boron	5	Primary System, Secondary Steam System	Supp. 3
Lithium Hydroxide	0.5	Primary System	
Ethylene Glycol	50	Exterior Heating/ Cooling System	
Propylene Glycol	50	Same as Ethylene Glycol	
Bulab 9328	0.4	Corrosion protection for fresh water systems	
Bulab 6002	20	Biocide in cooling tower	
Cat Floc TL	0.1	Liquid Radwaste System. To facilitate the removal materials made radioactive by neutron radiation in primary system	
Cat Floc L	0.1	Same as Cat Floc TL	
Nalcolyte 7134	0.1	Same as Cat Floc TL	
Sodium Nitrite	0.5	Heating/Cooling Systems	
Sodium Molybdate	0.5	Heating/Cooling Systems	
Sodium Silicate	5	Auxiliary Secondary System Scale Inhibitor	
Morpholine	0.1	Steam Generators	
Ethanolamine	0.5	Secondary Steam System	
Hypersperse AS 120	0.6	Antiscalant	Supp. 3
~~Flocon~~	~~0.01~~	~~Sequestering Agent~~	Supp. 3
Methoxypropylamine (MPA)	2.5	Secondary Steam System	Supp. 1

o. The permittee may propose to conduct feasibility studies involving new chemicals not currently approved for water discharge. Prior to the use of any such chemicals in a feasibility study, the permittee shall request approval from the Regional Administrator and Director with information regarding toxicity on aquatic organisms and concentration of the chemical in the discharge and duration of the discharge. Prior to full scale use of such chemicals, the permittee shall submit a report to the Regional Administrator and Director regarding discharge frequency and concentration

The impact of the thermal component of the discharge is rigorously assessed on an ongoing basis through implementation of the biological monitoring program required by the Seabrook Station NPDES Permit. The preoperational phase of this program was initiated in 1976 followed by the operational phase of the program initiated at the time of commercial operation of Seabrook Station in 1990. Annual reports documenting the biological monitoring program data, analyses and conclusions are submitted to the EPA, NHDES and Technical Advisory Committee. The annual reports continue to demonstrate that the operation of Seabrook Station has not adversely impacted the balanced indigenous populations of aquatic biota in the vicinity of the cooling water system intake and discharge structures.

North Atlantic has proposed in the renewal application to insert clarifying language into the permit to reflect the criteria previously approved by the EPA on May 22, 1986, for demonstrating compliance with the temperature rise limit in the receiving waters.

2) Clean Water Act Section 316 (b):

The location, design, construction and capacity of the Seabrook Station cooling water system have not changed nor does the NPDES Permit renewal application propose any change to these features of the cooling water system. Seabrook Station cooling water system flow is reported on an ongoing basis as required by the permit in the monthly Discharge Monitoring Reports.

The impact of the operation of the cooling water system is rigorously assessed on an ongoing basis through implementation of the biological monitoring program required by the Seabrook Station NPDES Permit. The preoperational phase of this program was initiated in 1976 followed by the operational phase of the program initiated at the time of commercial operation of Seabrook Station in 1990. Annual reports documenting the biological monitoring program data, analyses and conclusions are submitted to the EPA, NHDES and Technical Advisory Committee. The annual reports continue to demonstrate that the operation of Seabrook Station has not adversely impacted the balanced indigenous populations of aquatic biota in the vicinity of the cooling water system intake and discharge structures.

Since 1993, North Atlantic has observed the lethal entrapment of seals in the cooling water system of the plant. These entrapments have been reported to the National Marine Fisheries Service (NMFS). In June 1997, North Atlantic submitted a Marine Mammal Protection Act Small Take Permit Application. This application demonstrated that the takes of small numbers of seals incidental to the operationof Seabrook Station had negligible impact on seal stocks or the ability of the seal populations to reach and maintain their optimum sustainable levels and are only a small fraction of the reported non-natural mortalities that occur annually.

The final rule regarding Seabrook Station's Small Take Exemption Permit was published in the Federal Register on May 25, 1999. This rule became effective on July 1, 1999. The National Marine Fisheries Service issued a Letter of Authorization (LOA) setting forth a number of implementing conditions on July 2, 1999. The rule and LOA authorize the unintentional take of a small number of seals incidental to the routine operation of Seabrook Station. Supp. 3

The key provisions of the rule and LOA are:

Supp. 3

- The annual number of seal takes is limited to 20 harbor seals and four of any combination of gray, harp and hooded seals.

- North Atlantic will report to NMFS by January 1, 2000, its plans to mitigate impacts on seals and to implement such plans no later than 42 months from the issuance of the rule

- North Atlantic will implement monitoring and reporting requirements as specified in the LOA.

North Atlantic has stated its intent to install a barrier on the cooling water intakes of Seabrook Station in a letter to EPA dated May 25, 1999. EPA and NMFS will evaluate this effectiveness of this barrier as a seal deterrent.

ENCLOSURE 3 TO NYE-99017

Material Safety Data Sheet (MSDS) for Hypersperse

Argo Scientific
A BetzDearborn Company

Hypersperse™ AS 120UL

Antiscalant

Hypersperse™ AS 120UL is a highly effective liquid antiscalant developed to control scale precipitates within membrane separation systems. Use of this product provides longer run times and extended element life resulting in reduced operating and capital costs. Years of use in industrial applications show excellent results in membrane separation processes including reverse osmosis.

Hypersperse™ AS 120UL offers the following features:

- Classified for use in producing potable water. (Classified to ANSI/UL Standard 60).
- Effectively controls scales including calcium carbonate, calcium sulfate, barium sulfate, and strontium sulfate.
- Compatible with all of the leading R.O. membranes.
- May be fed neat or diluted

PROPERTIES

Appearance	:	Clear to pale amber liquid
Specific gravity	:	1.1 ± 0.05
pH	:	3.5 ± 0.5
Freeze point	:	32° F (0° C)
Minimum storage temp	:	34° F (1° C)
Shelf life	:	3 Years
Viscosity	:	26.6 cp at 25° C

APPLICATION

For maximum effectiveness, Hypersperse™ AS 120UL should be added prior to the static mixer or cartridge filter housing.

Maximum dilution is 10% with RO permeate or DI water.

PACKAGING:

This product is available in 45 lb. (5 gallon) pails and 525 lb. (55 gallon) plastic drums. Precautions should be taken to prevent the liquid from freezing as it may separate. Product integrity may be restored by slowly warming and then agitating.

DOSING

Typical dosage range is between 3 and 6 ppm. A sample dosage calculation for general purposes would be as follows:

Example: Hypersperse™ AS 120UL dosage was determined to be 4 ppm. The customer wished to make a dilution of one gallon of Hypersperse for every nine gallons of water in his day tank. If the system feed flow is 500 gpm, at what rate must the chemical feed pump be set?

Dilution = Gallons Hypersperse x 100 / Total gallons

Q_{cf} = Chemical feed pump rate, gpd

Q_{cf} = Feed flow, gpm x ppm Hypersperse x 0.130 / dilution

For this example: $Q_{cf} = 500 \times 4 \times 0.130 / 10 = 26$ gpd

Important note: Over or under-dosing may cause membrane fouling. Our technical service engineers are available to provide custom dosages for your application. Please contact Argo Scientific if you have any questions.

MAXIMUM DILUTIONS:

Maximum dilution is temperature related as shown below.

Temperature, °C	Maximum Dilution, %
<30	10
30-35	25
>35	50

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MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

PART I *What is the material and what do I need to know in an emergency?*

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED):	**HYPERSPERSE AS 120 UL**
CHEMICAL NAME/CLASS:	Not Applicable
SYNONYMS:	Homopolymer
PRODUCT USE:	Antiscalant
SUPPLIER/MANUFACTURER'S NAME:	ARGO SCIENTIFIC
ADDRESS:	185 Bosstick Blvd. San Marcos, CA 92069
EMERGENCY PHONE:	CHEMTREC: (800) 424-9300
BUSINESS PHONE:	(760) 727-2620
DATE OF PREPARATION:	November 20, 1997

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	% w/w	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA			
			TLV mg/m^3	STEL mg/m^3	PEL mg/m^3	STEL mg/m^3	IDLH mg/m^3	OTHER mg/m^3
Neutralized Polymer		30–40	NE	NE	NE	NE	NE	NE
Water and other constituents. The other constituents are each present in less than 1 percent concentration.		Balance	NE	NE	NE	NE	NE	NE

NE = Not Established. C = Ceiling Limit. See Section 16 for Definitions of Terms Used.

NOTE: All WHMIS information is included; it is located in appropriate sections based on the ANSI Z400.1-1993 format.

UL LISTED

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is a clear liquid with mild odor. This product may slightly irritate contaminated tissue. This product is neither reactive nor flammable. Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The most significant routes of occupational overexposure are inhalation and contact with skin and eyes. The symptoms of overexposure to this product are as follows:

INHALATION: Inhalation of mists or sprays of this product may irritate the nose, throat, or other tissues of the respiratory system. Symptoms of such exposure may include coughing, sneezing, difficulty breathing, nausea, and headaches.

CONTACT WITH SKIN or EYES: Depending on the duration and concentration of overexposure, eye or skin contact may cause slight irritation. Symptoms of skin contact may include redness and irritation. Prolonged or repeated overexposure to this product may cause dermatitis (dry, red skin). Symptoms of eye contact may include irritation and tearing.

SKIN ABSORPTION: Skin absorption is not a significant route of exposure for any component of this product.

INGESTION: Ingestion is not anticipated to be a likely route of exposure to this product. If this product is swallowed, it may cause gastric discomfort. Symptoms may include stomach pains, cramps, and gastritis.

INJECTION: Accidental injection of this product can cause burning, reddening, and swelling in addition to the wound.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms:

ACUTE: Inhalation exposure may cause coughing, sneezing, difficulty breathing, nausea, and headaches. Symptoms of skin and eye contact may include redness and irritation. Ingestion may cause stomach pains, cramps, and gastritis.

CHRONIC: Prolonged or repeated skin overexposure to this product may cause dermatitis (dry, red skin).

HAZARDOUS MATERIAL INFORMATION SYSTEM

HEALTH	(BLUE)	1
FLAMMABILITY	(RED)	0
REACTIVITY	(YELLOW)	0
PROTECTIVE EQUIPMENT		C

EYES	RESPIRATORY	HANDS	BODY
	SEE SECTION 8		

For routine industrial applications

4. FIRST AID MEASURES

Inhalation

Move subject to fresh air.

Eye Contact

Flush eyes with a large amount of water for at least 15 minutes. Consult a physician if irritation persists.

Skin Contact

Wash affected skin areas thoroughly with soap and water. Consult a physician if irritation persists.

Ingestion

If swallowed, give 2 glasses of water to drink. Consult a physician. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Flash Point	Noncombustible
Auto-ignition Temperature	Not Applicable
Lower Explosive Limit	Not Applicable
Upper Explosive Limit	Not Applicable

Unusual Hazards

Material can splatter above 100C/212F. Dried product can burn.

Extinguishing Agents

Use extinguishing media appropriate for surrounding fire.

Personal Protective Equipment

As in any fire, wear self-contained breathing apparatus (pressure-demand, MSHA/NIOSH approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal Protection

Appropriate protective equipment must be worn when handling a spill of this material. See SECTION 8, Exposure Controls/Personal Protection, for recommendations. If exposed to material during clean-up operations, see SECTION 4, First Aid Measures, for actions to follow.

Procedures

Keep spectators away. Floor may be slippery; use care to avoid falling. Contain spills immediately with inert materials (e.g. sand, earth). Transfer liquids and solid diking material to separate suitable containers for recovery or disposal.
CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

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7. HANDLING AND STORAGE

Storage Conditions

Keep from freezing; material stability may be affected. The minimum recommended storage temperature for this material is 1C/34F. The maximum recommended storage temperature for this material is 49C/120F.

Handling Procedures

Monomer vapors can be evolved when material is heated during processing operations. See SECTION 8, Exposure Controls/Personal Protection, for types of ventilation required.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limit Information

No		CAS REG NO	WEIGHT (%)
1	Neutralized polycarboxylic acid	Not Hazardous	34-36
2	Individual residual monomers	Not Required	<0.1
3	Water	7732-18-5	64-66

Comp.		ROHM AND HAAS		OSHA		ACGIH	
No	Units	TWA	STEL	TWA	STEL	TWA	STEL
1		None	None	None	None	None	None
2		a	a	a	a	a	a
3		None	None	None	None	None	None
Product:	mg/m3	0.1 b	None	None	None	None	None

a Not Required
b Respirable Fraction

Respiratory Protection

A respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. None required if airborne concentrations are maintained below the exposure limit listed in 'Exposure Limit Information'. For dust or mist up to 5 times the TWA/TLV's listed in -Exposure Limit Information-, wear a MSHA/NIOSH approved (or equivalent) disposable half-mask dust/mist respirator.

Eye Protection

Use chemical splash goggles (ANSI Z87.1 or approved equivalent).

Hand Protection

The glove(s) listed below may provide protection against permeation. Gloves of other chemically resistant materials may not provide adequate protection:
- Neoprene

Engineering Controls (Ventilation)

Use local exhaust ventilation with a minimum capture velocity of 150 ft/min. (0.75 m/sec.) at the point of dust or mist evolution. Refer to the current edition of Industrial Ventilation: A Manual of Recommended Practice

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published by the American Conference of Governmental Industrial Hygienists for information on the design, installation, use, and maintenance of exhaust systems.

Other Protective Equipment

Facilities storing or utilizing this material should be equipped with an eyewash facility.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear
State	Liquid
Odor Characteristic	Mild odor
pH	3.0 to 4.0
Viscosity	100 CPS Maximum
Specific Gravity (Water = 1)	1.2
Vapor Density (Air = 1)	< 1 Water
Vapor Pressure	17 mm Hg @ 20°C/68°F Water
Melting Point	0°C/32°F Water
Boiling Point	100°C/212°F Water
Solubility in Water	Completely soluble
Percent Volatility	64 to 66 % Water
Evaporation Rate (BAc = 1)	< 1 Water

See Section 5, Fire Fighting Measures

10. STABILITY AND REACTIVITY

Instability

This material is considered stable. However, avoid temperatures above 230C/446F, the onset of polymer decomposition. Thermal decomposition is dependent on time and temperature.

Hazardous Decomposition Products

Thermal decomposition may yield the following:
- acrylic monomers

Hazardous Polymerization

Product will not undergo polymerization.

Incompatibility

There are no known materials which are incompatible with this product.

11. TOXICOLOGICAL INFORMATION

Acute Data

Toxicity data for a compositionally similar material are listed below.

Oral LD50 - rat: >5000 mg/kg

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Subchronic/Chronic Data

A 13 week inhalation study in rats of a compositionally similar polycarboxylate material showed inflammatory effects in the lung at concentrations of 5 mg/m3 for 6 hours per day, 5 days per week. The no-observed-effect-level for this response was judged to be 1 mg/m3. Maintaining airborne concentrations within the recommended exposure limit is not expected to produce adverse effects within the lung.

Mutagenicity Data

Mutagenicity data for a compositionally similar material are listed below.

Ames mutagenicity: Negative

12. ECOLOGICAL INFORMATION

Environmental Toxicity

Zebra fish, 96 Hour LC50: > 200 mg/l
Marine copepod (acartia tonsa), 48 Hour LC50: > 1000 mg/l
Daphnia magna, 48 Hour EC50: > 200 mg/l

The above Environmental Toxicity data are for a compositionally similar material.

13. DISPOSAL CONSIDERATIONS

Procedure

Incinerate liquid and contaminated solids in accordance with local, state, and federal regulations.

14. TRANSPORT INFORMATION

US DOT Hazard Class ..... NONREGULATED

15. REGULATORY INFORMATION

Workplace Classification

This product as supplied is non-hazardous under the OSHA Hazard Communication Standard (29CFR 1910.1200). Under processing conditions it may become OSHA hazardous due to the potential for overexposure to dusts or mists. (See SECTION 8, Exposure Controls/Personal Protection.)

This product as supplied is not a 'controlled product' under the Canadian Workplace Hazardous Materials Information System (WHMIS).

SARA TITLE 3: Section 311/312 Categorizations (40CFR 370)

This product is not a hazardous chemical under 29CFR 1910.1200, and therefore is not covered by Title III of SARA.

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SARA TITLE 3: Section 313 Information (40CFR 372)

This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.

CERCLA Information (40CFR 302.4)

Releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to state and local emergency planning committees under the Superfund Amendments and Reauthorization Act (SARA) Title III Section 304.

Waste Classification

When a decision is made to discard this material as supplied, it does not meet RCRA's characteristic definition of ignitability, corrosivity, or reactivity, and is not listed in 40 CFR 261.33. The toxicity characteristic (TC), however, has not been evaluated by the Toxicity Characteristic Leaching Procedure (TCLP).

United States

All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

Pennsylvania

Any material listed as -Not Hazardous- in the CAS REG NO. column of SECTION 2, Composition/Information On Ingredients, of this MSDS is a trade secret under the provisions of the Pennsylvania Worker and Community Right-to-Know Act.

16. OTHER INFORMATION

Rohm and Haas Hazard Rating		Scale
Toxicity	1	4=EXTREME
Fire	0	3=HIGH
Reactivity	0	2=MODERATE
Special	.	1=SLIGHT
		0=INSIGNIFICANT

Ratings are based on Rohm and Haas guidelines, and are intended for internal use.

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ABBREVIATIONS:

ACGIH	= American Conference of Governmental Industrial Hygienists
OSHA	= Occupational Safety and Health Administration
TLV	= Threshold Limit Value
PEL	= Permissible Exposure Limit
TWA	= Time Weighted Average
STEL	= Short-Term Exposure Limit
BAc	= Butyl acetate

|	Bar denotes a revision from previous MSDS in this area.