



VIRGINIA POWER

October 22, 1993

50-280/281

Ms. Camille Cook
Piedmont Regional Office
Water Division
Department of Environmental Quality
P. O. Box 11143
Richmond, VA 23230

RE: SURRY POWER STATION - VA #0004090 - CHEMICAL ADDITION CHANGE

Dear Ms. Cook:

This is to request approval from your agency for a proposed change in chemical addition for pH control in the feedwater system at Surry Power Station. As you may be aware, maintaining specific levels of pH in steam generation systems is essential in the control of corrosion in these systems. Currently, ammonia is the chemical additive employed for this pH adjustment. The proposed change will be to substitute another product, ethanolamine (Calgon Pre-Tect 7000), for ammonia.

In the feedwater systems, the target concentration of ethanolamine will be in the range of 1.0 - 3.0 ppm. Due to distribution properties under system temperature and pressure conditions, concentration in the blowdown from the steam generators, to internal outfalls 181 and 191, may increase to a maximum of 10 ppm. At its maximum concentration in blowdown, and at the maximum blowdown rate of 70 gpm from each of six steam generators, the highest rate of discharge of ethanolamine, and its decomposition products, to the discharge canal would be 50.47 pounds per day. This is a theoretical worst case situation that would not be expected to actually occur since the steam generator blowdown is normally recovered and reprocessed for use within the steam generating system.

Ethanolamine decomposes to short chain organic acids (acetic, formic, glycolic), ammonia, and other organic amines. Even without allowance for any decrease in concentration through decomposition, the concentration of ethanolamine at the Outfall 001 discharge, under worst case conditions (<0.003 ppm), would be lower than the aquatic toxicity levels provided by the supplier. The supplier's data and the product Material Safety Data Sheet are attached.

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Please let me know as soon as possible if the Department of Environmental Quality has any objection to this chemical addition change. Should you need additional information or have any questions about this matter, please contact Daniel James at 273-2996.

Sincerely,



B. M. Marshall, P.E.
Manager
Water Quality

Attachment

cc: (w/attachments)
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW
Suite 2900
Atlanta, GA 30323
Re: Surry Units 1 & 2
Docket Nos. 50-280/50-281
License Nos. DPR-32/DPR-37

~~U.S. Nuclear Regulatory Commission~~
Document Control Desk
Washington, DC 20555
Re: Surry Units 1 & 2
Docket Nos. 50-280/50-281
License Nos. DPR-32/DPR-37

Mr. M. W. Branch
NRC Senior Resident Inspector
Surry Power Station



SUBSIDIARY OF MERCK & CO., INC.

WATER MANAGEMENT DIVISION
P.O. BOX 1346
PITTSBURGH, PA 15230
(412) 777-8000
FAX (412) 777-8927 OR 8104

March 1, 1993

Virginia Power
Insbrook Technical Center
Nuclear Chemistry Department
5000 Dominion Boulevard
Glen Allen, VA 23060-IN2SE

Attention: Mr. Edward Frese

Dear Mr. Frese:

I am providing the following available aquatic toxicity data to you at the request of our field sales representative, Mr. Craig Szymke.

<u>PRODUCT NAME</u>	<u>AQUATIC TOXICITY DATA (ppm)</u>
<u>Pretect 7000</u>	NDA*
- monoethanolamine	24 hr. LC50 (<u>Daphnia magna</u>): 140 96 hr. LC50 (fathead minnow): 125 96 hr. LC50 (bluegill sunfish): 75

- * No data available on formulated product. Toxicity data presented for individual ingredients.

I trust this information will satisfy your needs. If you should have any questions, please do not hesitate to contact Mr. Szymke or me.

Sincerely,

CALGON CORPORATION

Brian T. Laplante, Manager
Toxicology and Product Safety

BTL/mlh

cc: C. Szymke

MATERIAL SAFETY DATA SHEET

CALGON CORPORATION
P.O. Box 1346
Pittsburgh, PA 15230-1346



SUBSIDIARY OF MERCK & CO., INC.

24 Hour Emergency Telephone -- (412) 777-8000

I. PRODUCT IDENTIFICATION

PRODUCT NAME: Pre-Tect 7000

CHEMICAL DESCRIPTION: Alkaline aqueous solution

II. HAZARDOUS INGREDIENTS AND EXPOSURE LIMITS

<u>Chemical Name</u>	<u>CAS No.</u>	<u>I by Weight</u>	<u>Oral LD50 (rat)</u>	<u>Dermal LD50 (rabbit)</u>	<u>ACGIH TLV OSHA PEL</u>
Monoethanolamine	141-43-5	40	2050 mg/kg	1000 mg/kg	TWA 3 ppm, 8 mg/m ³ STEL 6 ppm, 15 mg/m ³

III. TYPICAL PHYSICAL PROPERTIES

BOILING POINT: Not available

SOLUBILITY IN WATER: Complete

VAPOR PRESSURE: Not available

SPECIFIC GRAVITY: 0.96 - 0.98

VAPOR DENSITY (air=1): Not available

pH: 11.6 - 12.4

% VOLATILE BY WEIGHT: 60 (water)

APPEARANCE AND ODOR: Clear, colorless liquid with ammoniacal odor.

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: > 200°F; This product is not flammable or combustible.

EXTINGUISHING MEDIA: Water spray, dry chemical, "alcohol" foam, or carbon dioxide.

SPECIAL FIREFIGHTING PROCEDURES: Exercise caution when fighting any chemical fire. A self-contained breathing apparatus and protective clothing are essential. Use water to keep fire-exposed containers cool.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Emits toxic gases under fire conditions.

MSHA RATINGS: Health = 3 Flammability = 0 Reactivity = 0 Special Hazard = NONE

While this information and recommendations set forth herein are believed to be accurate as of the date hereof, CALGON CORPORATION MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

V. REACTIVITY DATA

CHEMICAL STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Overheating

INCOMPATIBILITY: Strong oxidisers, strong acids, aluminum, copper

HAZARDOUS DECOMPOSITION PRODUCTS: Ammonia, nitrogen oxides, carbon monoxide, and carbon dioxide

VI. HEALTH HAZARD DATA

PRIMARY ROUTES OF ENTRY: Eye and skin contact, ingestion, inhalation, skin absorption

TARGET ORGANS: Eyes, lungs, liver, kidneys, skin, CNS, reproductive system

DANGER!

May cause severe eye damage.

May be harmful if swallowed.

May cause skin and respiratory tract irritation.

EFFECTS OF OVEREXPOSURE:

ACUTE

EYE CONTACT: This product would be expected to cause severe irritation upon contact with the eye and possibly permanent damage.

SKIN CONTACT: This product could cause skin irritation, especially upon prolonged or repeated exposure. By OSHA definition, pure monoethanolamine is toxic by skin absorption. Prolonged or widespread skin contact may result in the absorption of harmful amounts of material. There is no evidence that monoethanolamine can cause allergic contact dermatitis.

INGESTION: Based on the acute oral LD50 for ethanolamine, this product would be considered to be slightly toxic by ingestion. Swallowing the product may cause chemical burns of the mouth, throat, esophagus, and stomach. Other symptoms could include nausea, vomiting, diarrhea, dizziness and drowsiness.

INHALATION: Breathing of product vapor or mist may cause irritation with coughing and discomfort in the nose, throat and chest. In animal experiments, subacute high level exposures to ethanolamine vapor and mist produced pulmonary damage, lethargy and some nonspecific degenerative changes in the liver and kidneys. Lab tests have found ethanolamine to be a central nervous system stimulant at low doses, and a CNS depressant at lethal doses. Prolonged exposure to moderately high vapor concentrations may cause local injury to the respiratory tract. However, the sensory irritant property of ethanolamine vapors should give adequate warning of a potential acute inhalation overexposure situation.

VI. HEALTH HAZARD DATA (continued)

SUBCHRONIC, CHRONIC

No applicable information was found concerning any potential health effects resulting from subchronic or chronic exposure to the product. In spite of ethanolamine's wide use in industry, no reports of injury to workers have been found. Adverse reproductive effects have been demonstrated in rats fed 300 mg/kg of ethanolamine between day 6 and 15 of pregnancy.

CARCINOGENICITY:

NTP: No ingredients listed
IARC: No ingredients listed
OSHA: No ingredients listed

HMIS RATINGS: Health - 3* Flammability = 0 Reactivity = 0
Personal Protective Equipment = to be supplied by user depending on use conditions

*There are potential chronic health effects to consider.

VII. APPLICABLE CONTROL MEASURES

APPROPRIATE HYGIENIC PRACTICES: Do not get in eyes. Avoid contact with skin and clothing. Avoid breathing vapor or mist.

PERSONAL PROTECTIVE EQUIPMENT:

EYE PROTECTION: Chemical splash goggles

SKIN PROTECTION: Chemical resistant gloves

RESPIRATORY PROTECTION: If airborne concentrations exceed published exposure limits, use a NIOSH approved respirator in accordance with OSHA respiratory protection requirements (29 CFR 1910.134).

WORK PRACTICES: An eye wash station should be available in the immediate area of use.

HANDLING AND STORAGE PRECAUTIONS: Use with adequate ventilation.
Wash thoroughly after handling.
Keep container closed when not in use.

ENGINEERING CONTROLS: Local exhaust ventilation may be required in addition to general room ventilation.

VIII. FIRST AID

EYE CONTACT: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Seek medical aid immediately.

SKIN CONTACT: In case of contact, flush skin with plenty of water. Remove contaminated clothing. Seek medical aid if irritation persists. Wash clothing before reuse.

INGESTION: If swallowed, do NOT induce vomiting. Give large quantities of water. Seek medical aid immediately. Never give anything by mouth to an unconscious person.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical aid.

IX. SPILL OR LEAK PROCEDURES/WASTE DISPOSAL

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Wearing appropriate personal protective equipment, contain spill, collect onto inert absorbent and place into suitable container.

WASTE DISPOSAL: Dispose of in accordance with local, state and federal regulations. Avoid discharge to natural waters.

X. REGULATORY STATUS

TSCA STATUS: The ingredients of this product are listed on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory.

RCRA STATUS: This product as sold would not be considered a RCRA Hazardous Waste.

CERCLA reportable quantity of EPA hazardous substances in product: None

SARA TITLE III:

Section 302 Extremely Hazardous Substances: None

Section 311 and 312 Health and Physical Hazards:				
Immediate	Delayed	Fire	Pressure	Reactivity
[yes]	[yes]	[no]	[no]	[no]

Section 313 Toxic Chemicals: None

DOT CLASSIFICATION:

Hazard Class: Corrosive material
Proper shipping name: Monoethanolamine solution
ID number: UN 2491
Label: Corrosive

PREPARED BY: P.J. Maloney

62C4/AK