EXHIBIT G

ENVIRONMENTAL ASSESSMENT FOR AN ANTISCALANT CHEMICAL IN BOILER TREATMENT PRODUCTS WHERE STEAM FROM TREATED BOILERS MAY CONTACT FOOD.

1. May 8, 1998
2. Nalco Chemical Company
3. One Nalco Center, Naperville, IL 60563-1198
4. Nalco Chemical Company requests that Paragraph (C) of 21CFR173.310, Boiler Water Additives, be amended by inserting these items:

Sodium acrylate/styrene sulfonate copolymer containing a maximum of 15 mole percent sulfonated styrene for use as a boiler antisealant.

Limitations: Total Sodium acrylate/styrene sulfonate copolymer not to exceed 20 parts per million in the boiler feedwater. Boiler operating pressures not to exceed 1500 psig.

The purpose of the boiler water scale inhibitor is to prevent equipment failures which result from scale formation on heat transfer surfaces. Chemical treatments employed for these purposes in food plant boiler systems are regulated by 21CFR173.310.

This material provides improved calcium tolerance and thermal stability compared to conventional boiler treatment compounds currently available on the market. The compound has the added benefit of being fluorescent. Polymer can be monitored directly in the feedwater or boiler water using the fluorescent fingerprint of the polymer. Improved polymer determination using fluorescence ensures more accurate dosing and control of product to the boiler. These fluorescent characteristics can be used to optimize product levels and reduce the potential for product overfeed.

The product will be produced at Nalco's manufacturing facilities. The product will be used in food processing plants of all types. It is not possible to determine the types of environments present at or adjacent to these locations.

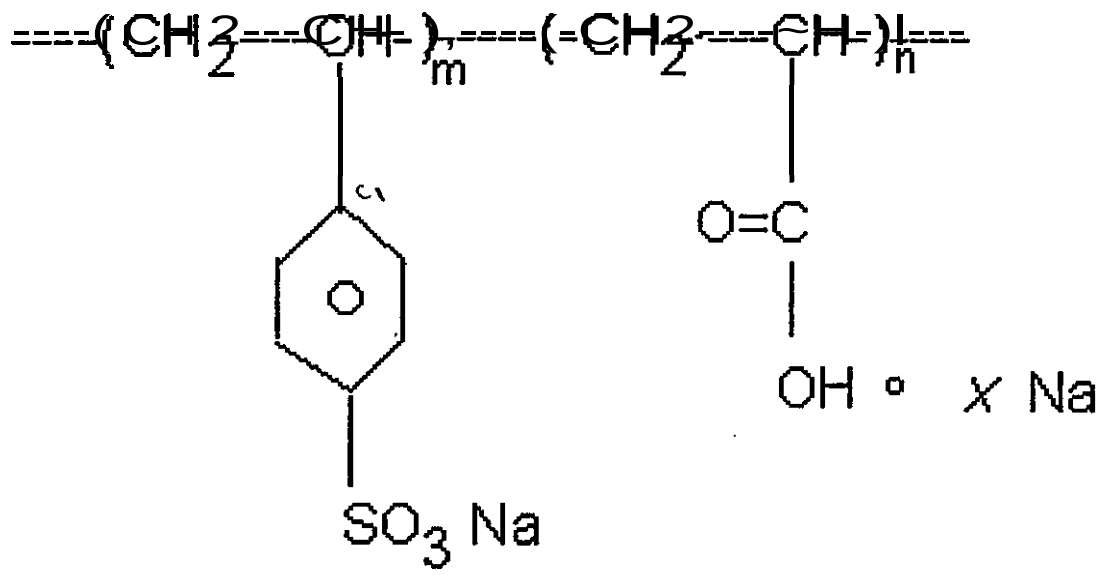
Disposal of the additive at the use site would be through boiler blowdown water which is discharged to POTW's.

5. The identification of the chemical substance that is the subject of the proposed action is presented below.

A. Chemical Identification

1. Common name: sodium acrylate/styrene sulfonate copolymer.

2. Chemical name following the nomenclature of Chemical Abstracts: 2-propenoic acid, polymer with sodium 4ethenlybenzene sulfonate, sodium salt, disodium disulfite and peroxydisulfuric acid ([HO)S(02]202) diammonium salt initiated
3. Molecular weight: 4,000 - 100,000
4. Mole Percent Acrylic Acid: 99.9 - 85%
5. Mole Percent Sulfonated Styrene: 0.1 - 15 %
6. Structural Formula:



$0.001 < \frac{m}{m+n} < 0.15$ $\quad 0 < x \leq 1$

B. Physical and Chemical Properties

Color:	**Colorless to Light yellow**	
Form:	**Liquid**	
Density:	**9.4 - 9.7 lbs/gal**	
Specific Gravity:	**1.1 - 1.2 @ 77 Degrees F**	**ASTM D-1298**
pH (Neat):	**2.8 - 4.0**	**ASTM E-70**
Flash Point	**Not applicable**	

These physical properties are typical values for a 30% aqueous solution of the copolymer.

6. Introduction of this aniiscalant copolymer into the environment as a result of its use in boiler systems associated with production/processing of food would be by virtue of boiler blowdown.

Based on fifth year production predictions, [CBI]. Complete paragraph is in Appendix II Confidential Information.

In as much as the copolymer is non-volatile, it reaches the boiler via the feedwater and will concentrate in the boiler water as a function of the boiler's cycles of concentration. Thus the primary route of discharge to the environment will be as a result of boiler blowdown. This discharge stream is a part of the plant's total daily discharge to a POTW.

As an example, a typical food processing plant discharges between 18,000 and 30,006 gallons of waste water daily. The plant has a 150 psig, 12 cycle, firetube boiler producing 150,000 pounds of steam per day. This equates to approximately 1,500 gallons per day boiler blowdown and thus accounts for between 5 and 10% of this total.

Assuming 2 ppm calcium in the feed water, the antiscalant would be fed at a dosage of 8.8 ppm polymer to the feedwater stream. At 12 cycles of concentration in the boiler, the resulting concentration of antiscalant in the boiler blowdown would be 106 ppm. Blowdown is 10% of the total plant waste water discharge. Thus the concentration of sodium acrylate/styrene sulfonate copolymer in the daily discharge would be approximately 11 ppm?

There are no extraordinary circumstances pertaining to the production of sodium acrylate/styrene sulfonate copolymer.

7. This petition concerns itself with sodium acrylate/styrene sulfonate copolymer, used as an antiscalant in boiler system fed to the feedwater.

The rate and ultimate potential of a substance to biodegrade is commonly measured by the biochemical oxygen demand (BOD). Based on the results of an independent, EPA

certified testing laboratory sodium acrylate/styrene sulfonate copolymer was found to have a 5 day BOD of 14,000 ppm[8].

Acute static toxicity tests on Rainbow trout (*Oncorhynchus mykiss*), fathead minnow (*Pimephales promelas*) and the Daphnid (*Daphnia magna*) show this polymer to have LC_{50}'s greater than 1,000 mg/l (Appendix II). Based on typical waste water concentration in a typical food plant an expected EEC of approximately 14 ppm might be expected.

8. Taken in conjunction with expected biodegradation and lack of aquatic toxicity, we do not foresee any potential for significant environmental impact as a result of the use of sodium acrylate/styrene sulfonate copolymer as a scale inhibitor in boiler systems associated with food plants.

----The copolymer is not expected to become a nonfunctional component of finished food packaging material.

9. Consumption of natural resources in the production, sale and distribution of the product will be minimal, since antiscalant is used at low concentrations and is expected to replace existing antiscalant products. Raw material usage represents less than 0.1% of the available acrylic acid produced globally. Nalco will manufacture the polymer from readily commercially available raw materials. The product is packaged and shipped to an end user, usually by truck. Disposal of the product will be through boiler blowdown (after use) or by disposal in non-hazardous land-fill (unused or unwanted product). Nalco sites manufacturing the sodium acrylate/styrene sulfonate copolymer are in compliance with all pertinent local, state and federal environmental regulations.

10. There are no potential adverse environmental impacts associated with the proposed action and therefore, no mitigation measures are necessary.

11. There are no potential adverse environmental impacts associated with the proposed action. Thus no alternatives to the proposed action are necessary. The action would in addition be a means of optimizing the feed of the antiscalant chemical treatment, which will result in a reduction in feed of these chemicals. The chemistry is more thermally stable and calcium tolerant compared to currently available polymers used for internal boiler treatment. Reduced polymer usage is anticipated because of improved efficacy under high boiler pressure conditions. The fluorescent properties of the chemical can be used to optimize product feed to reduce the potential of an overfeed condition.

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[8] Nalco Analytical Laboratory Report No. 208399.
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12. **Prepared By:**

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13. **The undersigned official certifies that the information presented is true, accurate, and complete to the best of the knowledge of the firm or agency responsible for preparation of the environmental assessment.**

14. **Date: May 8,1998**

15. **Signature of responsible official:**

Claude H. Wolf, MSc.
Corporate Toxicologist