EXHIBIT G

Environmental Assessment For An Inert Tracer Chemical In Boiler Treatment Products Where Steam From Treated Boilers May Contact Food.

1. April 14, 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 the following item:

> *Fluorescein, disodium or dipotassium salt solution. Limitations: for use only as an inert tracer in water treatment formulations up to a maximum concentration of 0.15% wt of the formulation.*

The purpose of boiler water and steam condensate treatment is to prevent equipment failures which result from scale formation, to prevent equipment failures due to corrosion, and to aid in obtaining pure steam, with minimum contamination by solids present in boiler water. Chemical treatments employed for these purposes in food plant boiler systems are regulated by 21CFR173.310.

The commercial use of fluorescent tracers for the monitoring of products fed in boiler water applications was begun in 1990. In boilers, product feed rates can be monitored by incorporating a fluorescent tracer in the product at a known concentration. A sample stream from the feedwater or the boiler water is continuously monitored by use of a fluorometer. The signal from the meter allows the boiler operators to precisely control (either manually or automatically) the feed rate of boiler water treatment chemicals used in their system. Today, tracer chemicals are employed to determine boiler cycles, carry over and boiler holding times, among others. They may also be used to establish automatic chemical treatment feed based on water flow and steam load.

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.

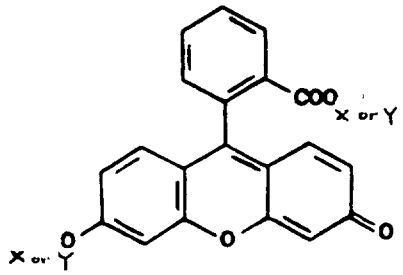
A. *Chemical Identity:*
   1. Common name: Disodium or dipotassium Fluorescein
   2. Chemical name following the nomenclature of Chemical Abstracts: Fluorescein, disodium or dipotassium
   3. Trade names: Uranine, D & C Yellow 8 and Acid Yellow 73
   4. Empirical formula: C_{20}-H_{10}-O_5-2Na; C_{20}-H_{10}-O_5-2K

5. Molecular weight: (Na) 376.28; (K) 408.2
6. CAS No. 518-47-8 (disodium salt); 6417-85-2 (dipotassium salt)

B. *Physical and Chemical Properties*

Color:	Yellow to reddish brown
Form:	Powder
Solubility in water	Free acid is insoluble (salts freely soluble)

C. *Structural Formula*



X = Na, Y = K

6. Introduction of this tracer 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, this use of the tracer material will account for (CBI) of the total production of this class of chemical[1].

Inasmuch as the tracer is non-volatile, it reaches the boiler by addition to the feedwater and will concentrate in the boiler water as a function of the boiler's cycles of concentration. Thus the only significant 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 30,000 gallons of waste water daily. The plant has a 150 psig, 12 cycle, fire-tube boiler producing 150,000 pounds of steam per day. This equates to approximately 1,500 gallons per day boiler blowdown thus accounts for between 5 and 8% of this total.

The inert tracer is fed to the feedwater via a scale/corrosion product containing 1,500 ppm tracer and fed at a dosage of 50 ppm product., This results in 75 ppb Fluorescein in the feedwater. At 12 cycles of concentration in the boiler this equates to 900 ppb tracer chemical in the boiler blowdown. Since blowdown is about 10% of the total plant waste water discharge, the concentration of Fluorescein in the daily plant effluent discharge would be 90 ppb. There are no extraordinary circumstances that pertain to the production site of this additive.

7. This petition concerns itself with the disodium or dipotassium salt of Fluorescein, used as an inert tracer in boiler system scale/corrosion products added to the boiler feedwater.

The rate and ultimate potential of a substance to biodegrade is commonly measured by the biochemical oxygen demand (BOD). Fluorescein was found to be highly biodegradable, i.e., 65, 68 and 100 % after 7, 12, and 20 days, respectively[2].

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[1] Calculated from data for 1980 sales of Fluorescein like Xanthene based dyes and intermediates in Kirk-Othmer, Volume 24; 3rd Edition; 1984.

[2] Data supplied by Hilton-Davis Co. (See attachment A - Acid Yellow 73)

8. Taken in conjunction with its high degree of biodegradation and low order of aquatic toxicity, we do not foresee any potential for significant environmental impact as a result of the use of disodium or dipotassium fluorescein as an inert tracer in boiler water treatment chemicals associated with food plants.

Acute 96-hour static toxicity tests with various species show these salts to be essentially non-toxic. 96-hour LC_{50} values of 1372, 3433, and 2267 mg/L for Rainbow trout, Bluegill sunfish, and Channel catfish, respectively have been reported.[3] Based on waste water discharges in a typical food plant, an expected EEC of approximately 9 µg/L (ppb) Fluorescein might be expected.

9. Consumption of natural resources in the production, sale and distribution of the product will be minimal, since the tracer is used at extremely low concentrations to minimize the amounts of treatment chemicals used relative to their untraced counterparts. Nalco has no role in the production of the chemical, but rather purchases it from commercial sources and simply blends it into an existing boiler water treatment product. Subsequently, 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 an appropriate land-fill depending on the nature of the product to which it had been added(unused or unwanted product).

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

[3] Data supplied by Hilton-Davis Co. (See attachment B)

11. There are no potential adverse environmental impacts associated with the proposed action. Thus no alternatives to the proposed action are necessary. The action is actually a means of optimizing the feed of current chemical treatment, which would result in a reduction in feed of these chemicals.

Without using an inert tracer, treatment chemicals are fed to treat the worst contaminant condition at maximum feed water flow to be conservative at all times. By using the inert tracer, treatment chemical feed can be modulated to the actual feedwater flow rate as well as the real time contaminant concentration variation, which minimizes treatment chemical dosage.

12. Prepared By:

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13. The undersigned official certifies that the information presented is true, accurate, and
14. complete to the best of the knowledge of the firm or agency responsible for preparation
15. of the environmental assessment.
16. Date: April 14, 1998
15. Signature of responsible official

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