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Proposal For Establishing Maximum Limits  
For Cyanide, Copper, Chromium, Zinc,  
and Nickel

at Chemical Spill Sites 1 and 2  
Stewart Warner Corporation -  
Bassick Sack Division  
Winston Salem, North Carolina

**CERCLA**

Prepared for:

Stewart Warner Corporation-  
Bassick Sack Division  
Winston Salem, North Carolina

Prepared by:

Research And Analytical Laboratories, Inc.  
106 Street  
Kernersville, North Carolina

August 1987

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WRITER'S DIRECT NUMBER

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August 21, 1987

Mr. R. Douglas Holyfield  
Field Operations Supervisor Hazardous  
Waste Compliance Unit Solid and  
Hazardous Management Branch  
306 N. Wilmington Street  
Room 213, Bath Building  
Raleigh, NC 27602

Re: Allowable Residual Contamination Limits  
for Stewart-Warner Clean-Up

Dear Mr. Holyfield:

As you know, we represent Stewart-Warner, Bassick-Sack, in this matter. Pursuant to the letter sent to you by Jim E. Stanley, General Manager of Bassick-Sack, dated July 30, 1987 we wish to enter into meaningful negotiations concerning the residual clean-up levels proposed in your letter of June 26, 1987. As will be outlined below, it is our position alternative residual levels exist, supported by acceptable data, which when met will provide adequate protection of human health and the environment in the spill site areas.

Please find enclosed a proposal presented by Research and Analytical Laboratories, Inc. for establishing maximum limits for the hazardous substances found at chemical spill sites 1 and 2. The limits proposed are ten times the interim primary drinking water standards for copper, zinc and chromium. Further, the limits for nickel and cyanide are also ten times the drinking water quality standards proposed by the United States Environmental Protection Agency for those substances. We believe these limits are justified, by among other things the limited human

Mr. R. Douglas Holyfield  
August 21, 1987  
Page 2

contact with the contaminated areas, the depth to groundwater at the site, and the predominantly clay to clay-loam soils found at the site.

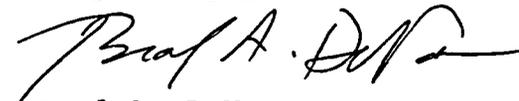
Stewart-Warner desires a speedy completion of this matter and will attempt to comply, to the best of its ability, with the schedule found within the comprehensive site report submitted July 30, 1987. Further, we believe the proposed clean-up limits can reasonably be met with current clean-up technology and will afford proper protection to human health and the environment in the spill site areas.

We assert the emphasis of the clean-up effort should be placed upon the cyanide and chromium contamination as they are the only "toxics" among the hazardous substances detected at the spill sites. Upon the clean-up of those substances to the proposed residual limits, we request the Department of Human Resources refrain from requiring any further clean-ups of copper, zinc or nickel. Any further clean-up would result in costs to Stewart-Warner vastly disproportionate to any benefit afforded to the protection of human health or the environment in the area. This again is justified by the distance to groundwater in the area, the limited human contact with the area, and the fact these substances are not "toxics." Any residual amounts of copper, zinc or nickel remaining after the excavation of cyanide and chromium will not be a threat to human health or the environment. Therefore, we request that upon the completion of a clean-up to the proposed residual limits for cyanide and chromium that Bassick-Sack not be required to conduct any further excavation solely for the purpose of removing copper, zinc or nickel.

If you have any questions concerning the limits proposed by Research and Analytical Laboratories or of Bassick-Sack's position in this matter please feel free to contact me at (919) 721-3714.

Thank you for your cooperation.

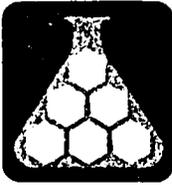
Very truly yours,



Brad A. DeVore

BAD:llp  
Enclosures

cc: Mr. J. Rhodes  
Mr. Jim E. Stanley  
R. Howard Grubbs, Esquire



# RESEARCH & ANALYTICAL LABORATORIES, INC.

Analytical/Process Consultations

Proposal For Establishing Maximum Limits  
For Cyanide, Copper, Chromium, Zinc, and Nickel

at Chemical Spill Sites 1 and 2

Bassick Sack Division, Winston Salem, North Carolina

It is proposed by Research and Analytical Laboratories, Inc., a subsidiary of Russell and Axon Engineers - Planners - Architects, Inc., that the following maximum limitations be imposed for contaminants identified within Chemical Spill Sites 1 and 2 which include the following:

<u>Parameter</u>	<u>Maximum Limit Concentration</u>		
Cyanide	44	mg/kg	
Copper	10	mg/l	Extractable
Zinc	50	mg/l	Extractable
Chromium	0.5	mg/l	Extractable
Nickel	3.5	mg/l	Extractable

## 1.0 Justification

These limitations were developed based upon the following considerations:

- 1) Minimum contact area with respect to exposure to human or wildlife habitat
- 2) No ground water potable source identified within 2,000 feet.
- 3) Depth to groundwater estimated by USGS to be between 35 to 40 feet
- 4) Soil type predominantly clay to clay-loam at 1.0 foot depth
- 5) Federal Office of Drinking Water Health Advisory indicates existing advisory limits to be used as a guideline but limits recommended have no legal basis
- 6) No limitations have been adopted by EPA with respect to a maximum acceptable limit for cyanide in soil
- 7) According to EPA, there is no accepted method that is used for analyzing extractable cyanide in soil

## 2.0 Rationale

The rationale used for developing maximum acceptable limitations for copper, zinc, chromium, and nickel was based upon current Federal Drinking Water Standards (ie: Zn, Cu, Cr) and/or Federal Health Advisory recommendations (ie: Ni) times a factor of ten. The ten factor was considered acceptable based upon the above justifications.

The rationale for developing a maximum acceptable limitation for total cyanide in soil was based upon the conservative assumption that 100 percent of the total cyanide is extractable and the federal health advisory recommendation of 0.22 mg/l (ie: in water) is acceptable. Using a factor of 10 based upon minimum contact area this would give an acceptable maximum cyanide concentration in water of 2.2 mg/l (ie:  $0.22 \times 10$ ). Since there is no standard cyanide leachate method to calculate the maximum cyanide concentration in soil the following back calculation is recommended:

- 1) Assume total cyanide in soil equals 44 mg/kg
- 2) 100 grams of soil contains 4.4 mg of cyanide
- 3) A 100 gram sample is extracted, using the EP Toxicity Procedure approved by EPA to a final volume of 2.0 liters
- 4) Assume 100 percent of cyanide is extractable
- 5) Then 4.4 mg of Cn divided by 2.0 liters equals 2.2 mg/l of Cn
- 6) 2.2 mg/l of Cn equals 0.22 mg/l of Cn (Health Advisory) X 10