

Dolsby, Inc.  
124 Hegenberger Loop  
Oakland, CA 94621

Attention: Ms Logan

Per your request, we are furnishing you with the pertinent information needed to clean up the property at 124 Hegenberger Loop in Oakland. We feel that the following procedures will meet with your approval, as well as meet all Federal requirements.

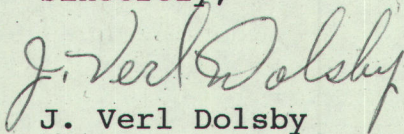
1. This procedure explains how we plan on changing the Hexivalent Chrome to a Trivalent Chrome.
2. With previous Lab analysis and core sampling, we can determine the approximate amount of Sodium Bisulfite needed to neutralize the existing Hexivalent Chrome.

With the approval of these procedures, we will need a letter of approval to proceed. We will also need guidelines that we must meet so that the property at 124 Hegenberger Loop in Oakland can be cleared.

Upon completion of the clean up at 124 Hegenberger Loop in Oakland, we anticipate a letter verifying that we met your requirements and that the property is cleared for resale

If any further information is needed, we will be happy to supply it, to get this matter resolved as quickly as possible.

Sincerely,

  
J. Verl Dolsby

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124 Hegenberger Loop  
Oakland, CA 94621

- I. The objective is to CHEMICALLY NEUTRALIZE CHROMATES at 124 Hegenberger Loop located in Oakland, California.
- a. We can reduce chrome by adding either liquid Sodium Bisulfite or Sodium Bisulfite powder to concentrated chrome. Then we check for chrome. If chrome still shows positive on the spot test, (appendix A) we make necessary additions until the Spot test shows up negative. Negative readings are equal to .5 ppm.
  - b. We prefer to use the Sodium Bisulfite to neutralize chrome but Sodium Hydrosulfite can be used. However it is less efficient in low pH conditions. To treat solution using Sodium Hydrosulfite, raise pH to 7.8 - 8.0, then reduce the chrome.
  - c. When reducing Chromic acid the statement is used that the chrome is "killed". "Killed" is a common term which means to destroy or eliminate. However, "kill" is chemically inaccurate. In reality the chrome is "reduced". That is to say that the chrome reduced from the highly toxic Hexavalent Chromium to a non-toxic Trivalent Chromate.
  - d. When reducing Chromium the pH determines which chemical is used. Chromium is reduced with Sodium Bisulfate, when the pH is from 0 to 7.0 and with Sodium Hydrosulfite, when the pH is from 7.0 to 14. To further explain:
    - 1 When the Sodium Bisulfite is added to solutions containing Hexavalent Chrome, the following chemical reaction rapidly takes place:  
$$4CrO + 3HSO + 6NaHSO \rightarrow 2Cr(SO) + 3NaSO + 6HO$$
    - 2 Thus the end product is chromous sulfate sodium sulfate and water.
  - e. When Sodium Hydrosulfite is added to solutions containing Hexavalent Chrome the following chemical reaction rapidly, takes place:  
$$2NaCrO + 3NaSO + 2HO + NaCO \rightarrow Cr(OH)CO + 6NaSO$$
    - 1 Thus the end product is hydrated chromous carbonate and sodium sulfite.

## APPENDIX A

### CHROMIC ACID SPOT TEST

The test procedures are to verify that the chromates have been chemically neutralized to Government required limits. The test determines if the neutralizing process has been accomplished properly.

#### **SPECIFICATIONS:**

Type	Qualitative
Limit of Identification	0.5 ppm CrO <sub>3</sub>
Color	Pink-Violet

#### **REAGENTS:**

1. 1% Diphenylcarbazide Indicator (Dissolve contents (0.25 gm) of one ampoule of Diphenylcarbazide in 25 ml C>P> Acetone)

**NOTE: MAKE UP AS REQUIRED.**

2. 2 N Sulfuric Acid.

**NOTE: LAB SUPPLIES 2 N SULFURIC ACID.**

#### **PROCEDURE:**

1. Place one drop of sample in each of the three test block spots.

**NOTE: PLACE ON WHITE SURFACE TO AID IN READING RESULTS.**

2. To each drop add one drop of 2 N Sulfuric Acid and stir with a clean stirring rod.
3. To each drop add one drop of Diphenylcarbazide Indicator and stir with a clean stirring rod. The sample spot will turn pink to violet depending upon the chromic acid concentration. If no chromic acid is present, the sample spot will turn yellow or remain clear.