analytical process. Duplicate samples shall agree within 10 percent.

7.3.4 ICP Reagent Blank Samples. Analyze a minimum of one matrix-matched reagent blank (section 5.2.2) per sample batch to determine if contamination or memory effects are occurring. The results should agree within three standard deviations of the mean blank value.

8. Emission Calculations

Carry out the calculations, retaining one extra decimal figure beyond that of the acquired data. Round off figures after final calculations.

8.1 Total Cr in Sample. Calculate M_{Cr}, the total µg Cr in each sample, as follows: Eq.306-1

 $M_{Cr} = (V_{ml}) (C_S) (F) (D)$ where:

V_{ml} = Volume of impinger contents plus rinses. ml.

 C_{S} = Concentration of Cr in sample solution, μg Cr/ml.

F = Dilution factor.

= Volume of aliquot after dilution, ml; Volume of aliquot before dilution, ml

D = Digestion factor.

= Volume of sample aliquot after digestion, ml; Volume of sample aliquot submitted to digestion. ml

8.2 Average Dry Gas Meter Temperature and Average Orifice Pressure Drop. Same as Method 5, section 6.2.

8.3 Dry Gas Volume, Volume of Water Vapor, Moisture Content. Same as Method 5, sections 6.3, 6.4, and 6.5, respectively

8.4 Cr Emission Concentration. Calculate C_{Cr}, the Cr concentration in the stack gas, in mg/dscm on a dry basis, corrected to standard conditions, as follows:

 $C_{Cr}=(10^{-3} \text{ mg/}\mu\text{g}) (M_{Cr}/V_{m(std)})$ Eq. 306-2 where:

V_{m(std)}=Gas sample volume measured by the dry gas meter, corrected to dry standard conditions, dscm.

8.5 Isokinetic Variation, Acceptable Results. Same as Method 5, sections 6.11 and 6.12, respectively.

9. Bibliography

1. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," U. S. **Environmental Protection Agency**

Publication SW-846, 2nd Edition, July 1982. 2. Cox, X.B., R.W. Linton, and F.E. Butler. Determination of Chromium Speciation in Environmental Particles—A Multitechnique Study of Ferrochrome Smelter Dust. Accepted for publication in Environmental Science and Technology.

3. Same as Bibliography of Method 5, Citations 2 to 5 and 7.

4. California Air Resources Board, "Determination of Total Chromium and Hexavalent Chromium Emissions from Stationary Sources." Method 425, September 12, 1990.

5. "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods", U.S. Environmental Protection Agency Publication SW-846, 3rd Edition, November 1986 as amended by Update I, November 1990.

Method 306A—Determination of Chromium **Emissions From Decorative and Hard Chromium Electroplating and Anodizing** Operations

1. Applicability and Principle

1.1 Applicability. This method applies to the determination of chromium (Cr) in emissions from decorative and hard chromium electroplating facilities and anodizing operations. The method is less expensive and less complex to conduct than Method 306 of this appendix. Correctly applied, the precision and bias of the sample results will be comparable to those obtained with the isokinetic Method 306 of this appendix. This method is applicable under ambient moisture, air, and temperature conditions.

1.2 Principle. A sample is extracted from the source at a constant sampling rate determined by a critical orifice and collected in a probe and impingers. The sampling time at the sampling traverse points is varied

according to the stack gas velocity at each point to obtain a proportional sample. The concentration is determined by the same analytical procedures used in Method 306 of this appendix: inductively-coupled plasma emission spectrometry (ICP), graphite furnace atomic absorption spectrometry (GFAAS), or ion chromatography with a post-column reactor (IC/PCR).

2. Range, Sensitivity, Precision, and Interferences

Same as Method 306, section 2 of this appendix.

3. Apparatus

Note: Mention of trade names or specific products does not constitute endorsement by the Environmental Protection Agency.

3.1 Sampling Train. A schematic of the sampling train is shown in Figure 306A-1. The components of the train are available commercially, but some fabrication and assembly are required. If Method 306 equipment is available, the sampling train may be assembled as specified in Method 306 of this appendix and the sampling rate of the meter box set at the delta H@ specified for the calibrated orifice; this train is then operated as specified in this method.

3.1.1 Probe Nozzle/Tubing and Sheath. Use approximately 1/4 in. inner diameter (ID) glass or rigid plastic tubing about 8 in. long with a short 90° bend at one end to form the nozzle. Grind a slight taper on the nozzle end before making the bend. Attach the nozzle to flexible tubing of sufficient length to collect a sample from the stack. Use a straight piece of larger diameter rigid tubing (such as metal conduit or plastic water pipe) to form a sheath that begins about 1 in. from the 90° bend on the nozzle and encases the flexible tubing.

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