

REVIEW OF NIOSH DOCUMENT

**Titles: NIOSH Manual of Analytical Methods (NMAM) Method 7704, Beryllium by field-portable fluorescence (air)  
 NMAM Method 9110, Beryllium by field-portable fluorescence (wipes)  
 Backup Data report for NMAM Method 7704 and Method 9110  
 (NIOSH Docket #077)**

Anticipated Publication: NIOSH Manual of Analytical Methods (NMAM), 5<sup>th</sup> Edition

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YES NO  
 (explain below)

1. Does the Backup Data Report explain the problem and summarize relevant literature adequately? X
2. Is the information in the Methods and Backup Data Report provided technically accurate? X
3. Are there any recommendations for the organization of these 3 documents?     X
4. Are there any changes or corrections needed in the Backup Data Report? X
5. Are there any changes needed in either of the Methods? X
6. In general, are the Methods and Backup Data Report satisfactory? X
7. What is your recommendation for these methods as now written? (Check One):
  - a. Approve for publication/dissemination
  - b. Approve after modification (please describe) X
  - c. Not Approve (please describe)

**DETAILED COMMENTS:** (Provide comments in this space or on a separate sheet. Check here if a separate sheet is attached).    

In general, the Methods and Backup Data Report are satisfactory. However, some corrections and clarifications will be required prior to approval. See notes below:

For draft method 7704 I would recommend that the units for Cs be in ug/ml rather than ug/l and that the units for V be in m3 rather than liters. This would be more consistent with other methods and the formula for calculating the concentration would be a bit cleaner.

**Backup Data**

Appendix 2, Table A2-1 refers to Whatman 504 filters. Could this be a typo? Were the filters actually Whatman 541 as used for many of the other evaluations?

**Method 9110, Limits Section**

There are surface contamination limits specified in the DOE beryllium rule for housekeeping (10 CFR 850.30) and release of equipment (10 CFR 850.31). The housekeeping standard for surface contamination in beryllium areas between operations is 3 ug/100 cm<sup>2</sup> and the generally accepted housekeeping guideline for non-beryllium areas is 0.2 ug/100 cm<sup>2</sup> (implied in the beryllium rule). The beryllium surface contamination standards for release of equipment are 3 ug/100 cm<sup>2</sup> for release to beryllium areas and 0.2 ug/100 cm<sup>2</sup> for release to the general public.

Method 7704, Limits Section

The current ACGIH TLV is  $0.002 \text{ mg/m}^3$ , not  $0.0002 \text{ mg/m}^3$  as indicated. An NIC of  $0.00005 \text{ mg/m}^3$  has been proposed, but is not yet adopted.

Method 7704 and 9110, Calculation Sections

It should be clarified that  $V_s$  is the dissolution volume (normally 5ml) and that  $C_s$  is the concentration in the diluted sample (normally 20x dilution).

Method 9110, Calculation Section

The calculations section requires correction. The correct unit for  $C_s$  is  $\text{ug/ml}$ , not  $\text{ug/l}$ . This appears to be a carry-over from the calculations from Method 7704, which used  $\text{ug/l}$  to get the final concentration in  $\text{ug/m}^3$  rather than  $\text{mg/m}^3$  (compare to Method 7300).

The area A in the formula is in units of  $100 \text{ cm}^2$ , not the actual area. A is equal to the actual area sampled in  $\text{cm}^2$  divided by 100. This should be clarified in the section

Method 9110, Sampling Section

Step 2 should be eliminated. A reference to ASTM D6966 is adequate. There are many situations where the use of templates is not practical or may actually present safety hazards for the sample collector (e.g. working at heights from a ladder). Samples of many different sizes and shapes may be required. ASTM D6966 addresses these issues. The important factor is that the area of the surface sampled is documented so that the result can be normalized to concentration per  $100 \text{ cm}^2$ .

Method 9110, Sample Preparation Section, Step 5

The words "surface swipe" should be changed to "surface wipe" to be more consistent with the rest of the document. The word "swipe" is actually an abbreviation of "surface wipe".

Method 9110, References Section

I do not see references 4 and 5 cited in the text of the method. They may be a carry-over from method 7704, which does cite these references.