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3 **Method Name:**

4 **Determination of Heavy Metals in a Variety of Cannabis**
5 **and Cannabis Derived Products**

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7 **Approved by:**

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9 **Final version date:**

10 **Effective date:**

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12 **Intended Use:** Surveillance methods for routine monitoring

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14 **1. Applicability:**

15 Determination of total cadmium (CAS No. 7440-43-9), total arsenic (CAS No. 7440-
16 38-2), total lead (CAS No. 7439-92-1), and total mercury (CAS No. 7439-97-6).
17 Additional elements in Table 1 may be included.

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19 **2. Analytical Technique:**

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22 Inductively Coupled Plasma based instrumentation or alternative methodology that
23 meets the performance requirements

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25 **3. Definitions:**

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27 **Limit of Quantitation (LOQ)**

28 The minimum concentration or mass of analyte in a given matrix that can be reported
29 as a quantitative result.

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31 **Repeatability**

32 Variation arising when all efforts are made to keep conditions constant by using the
33 same instrument and operator, and repeating during a short time period. Expressed
34 as the repeatability standard deviation (SD_r); or % repeatability relative standard
35 deviation ($\%RSD_r$).

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37 **Reproducibility**

38 The standard deviation or relative standard deviation calculated from among-
39 laboratory data. Expressed as the reproducibility relative standard deviation (SD_R); or
40 % reproducibility relative standard deviation ($\%RSD_R$).

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42 **Recovery**

43 The fraction or percentage of spiked analyte that is recovered when the test sample
44 is analyzed using the entire method.

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4. Method Performance Requirements:

Limit of Quantitation (LOQ)	≤ 10 ppb (µg/kg)		
Range	Repeatability (RSD _r)	Reproducibility (RSD _R)	Recovery
>100 ppb to 1 ppm	15%	32%	60% - 115%
≥ 10 ppb to 100 ppb	11%	16%	80% - 115%
> 1 ppm to 10 ppm	7.3%	8%	80% - 115%

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5. System suitability tests and/or analytical quality control:

Suitable methods will include blank check samples, and check standards at the lowest point and midrange point of the analytical range.

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6. Reference Material(s):

A certified reference material should be used when available. Internally produced reference materials may be used for a variety of cannabis products such as plant material, concentrates, and finished products, and infant formula until reference material is made available by an internationally-recognized organization such as Institute for Reference Materials and Measurements (IRMM) or United States National Institute of Standards and Technology (NIST).

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7. Validation Guidance & References:

Recommended level of validation: *Official Methods of Analysis*SM

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8. Maximum Time-To-Result: No maximum time.

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Table 1: Optional Elements Not Frequently Required

- Antimony
- Barium
- Chromium
- Copper
- Nickel
- Silver
- Selenium
- Zinc

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