DEPARTMENT OF
ECOLOGY
State of Washington

Follow-up on Formaldehyde in Children's Products, 2018

Addendum to Quality Assurance Project Plan: Product Testing Program, Version 1.0

June 2018

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Addendum

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This addendum includes numbering and format of Ecology's current QAPP format, not available at the time of publication for the original QAPP. Format updates do not adversely alter the substantive content of the publications.

Activity Tracker code

Ecology's Activity Tracker code for this addendum is 17-040.

Related Publication

An Assessment of Children's Safe Products Act Data, an Addendum to Quality Assurance Project Plan: Product Testing Program Version 1.0.
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Follow-up on
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EAP: Environmental Assessment Program
HWTR: Hazardous Waste and Toxics Reduction Program

3.0 Background

Under the Children's Safe Products Act (CSPA) reporting rule (Chapter 173-334 Washington Administrative Code (WAC)), chemicals of high concern to children (CHCCs) must be reported when present in children's products offered for sale in the state of Washington. The Washington State Department of Ecology (Ecology) periodically performs analysis of children's products to assess compliance with CSPA and the reporting rule.

In 2017, Ecology conducted an 'Assessment of Children's Safe Products Act Data' that assessed the occurrence of formaldehyde in children's products. This addendum describes activities that build upon the results of that study (see Section 3.2.2 below). It includes only sections and information that differ from the original QAPP or that clarify the study for the reader.

3.1.3 Chemicals of concern

Selected children's products will be investigated for the presence of formaldehyde.

3.2.2 Summary of previous studies and existing data

Ecology's 2016-2017 study assessed formaldehyde, octamethylcyclotetrasiloxane (D4), methyl ethyl ketone (MEK) and styrene in children's products purchased in Washington State (Sekerak, 2017). For the analysis of formaldehyde, a majority of the products tested included ones to be applied to the hair and body, as well as those to be used in, or that may come in close proximity to, the mouth. Thirty-one of the 84 children's products tested for formaldehyde contained concentrations ranging from 4.19 ppm to 3,390 ppm of formaldehyde. All data collected under this study were evaluated for compliance with CSPA, specifically, whether or not manufacturers reported when their children's products contain chemicals of high concern, as required by the law.

4.0 Study Description

This study plan describes follow-up testing for formaldehyde for two children's products analyzed for the following study: Formaldehyde, D4, MEK, and Styrene in Children's Products (final report) (Sekerak, 2017) and An Assessment of Children's Safe Product Act Data: Addendum to Quality Assurance Project Plan: Product Testing Program Version 1.0 (plan) (Sekerak, 2016b).

4.1 Study goals

The primary goal of this study is to provide data to Ecology's Compliance Lead to assess and support compliance actions under CSPA and the reporting rule.

4.4 Tasks required

Specific tasks for this study include:

- Work with MEL to secure an Ecology-accredited contract lab to perform the analysis of formaldehyde.

- Purchase, in duplicate, **Spongebob Squarepants Bubble Liquid and Wand**, Universal Product Code (UPC) 093539302073, manufactured by Little Kids, Inc. The duplicate product will be used as a field replicate.
  - Purchase one additional **Spongebob Squarepants Bubble Liquid and Wand**, UPC 093539302073, from an alternate location.
  - Purchase additional bubble liquid-containing products manufactured by Little Kids, Inc. resulting in a total of five products for testing.

- Purchase, in duplicate, **Paw Patrol Bowl**, UPC 707226794736, manufactured by Zak Designs, Inc. The duplicate product will be used as a field replicate.
  - Purchase an additional **Paw Patrol Bowl,** UPC 707226794736, from an alternate location.
  - Purchase additional bowl/plate products manufactured by Zak Designs, Inc. resulting in a total of four new purchased products for testing.

- Send five purchased bubble liquid-containing products manufactured by Little Kids, Inc. and four purchased bowl/plate products manufactured by Zak Designs, Inc. to the contract lab.

- Send a portion of the original, previously-tested **Paw Patrol Bowl** (Component ID: **BRU-1-9-1**) to the contract lab for analysis.

- Send a portion of previously tested Component ID: **DT-11-4-2** for analysis as a grinding blank.

- Project Manager (PM) or PM's designee reviews data quality of contract laboratory results and works with MEL's Quality Assurance (QA) Coordinator to resolve any issues.

5.0 Organization and Schedule

5.4 Project Schedule

Table 1. Schedule for completing product collection and laboratory work, data reviews, data entry into product testing database (PTDB), and reports.

Product Collection, Processing, and Laboratory Work	Due Date	Lead Staff
Product collection completion	6/2018	T. Schaefer/C. Wiseman
Product logging in completion	7/2018	Chrissy Wiseman
Internal data QA completion	7/2018	Chrissy Wiseman
Laboratory analyses completion	9/2018	
Data		
Lab data QA reviewed	soonest as available	Sara Sekerak
Lab data loaded into PTDB	soonest as available	Sara Sekerak
Lab data to Compliance Lead	soonest as available	Sara Sekerak
PTDB data QA review completion	soonest as available	Chrissy Wiseman

5.6 Budget and Funding

Table 2. Project budget and funding.

Activity/Parameter	Number of Samples	QC Samples	Cost per Sample	Subtotal	
Product Collection	10	---	$10	$100.00	---
				Product Collection Total:	$100.00
Contract Laboratory Testing					
Cryomilling	5	1*	$75	$450	---
Formaldehyde	10	5^	$195	$2,925	---
				Laboratory Total:	$3,375.00
				Manchester Environmental Laboratory Data Quality Review:	$1012.50
				Study Total:	**$4,487.50**

* Client-provided grinding blank.

^ Includes client-provided cryomill grinding blank, lab duplicates and matrix spikes.

6.0 Data Quality

Measurement quality objectives (MQOs) and QA targets have been updated to reflect the contract lab specific criteria.

Table 3. Table of measurement quality objectives.

Analyte	Matrix	Blanks	LCS (% recov.)	Matrix Spikes (% recov.)	Lab Duplicates (RPD)
Formaldehyde	Solids	< RL	26 - 126%	50 - 150%	≤ 40%
Formaldehyde	Liquids	< RL	58 - 118%	50 - 150%	≤ 40%

LCS = Laboratory control sample
RL = Reporting limit

6.3 Containers, preservation methods, holding times

Liquid samples will be sent to the contract laboratory in their original sealed container. Solids will be sent in pre-cleaned glass jars provided by the contract laboratory.

7.0 Measurement Methods

7.2 Lab procedures table

The laboratory methods and requested reporting limits are presented in Table 4.

Table 4. Table of laboratory methods, instrumentation, and reporting limits.

Analyte	Matrix	Expected Range of Results	Requested Reporting Limit	Preparation Method	Analysis Method	Analysis Instrument
Formaldehyde	Solids	<5 – 5,000 mg/Kg	5 mg/Kg	EPA 8315A	EPA 8315A	HPLC-UV/Vis
Formaldehyde	Liquids	<5 – 1,000 mg/L	5 mg/L			

HPLC-UV/Vis = High-performance liquid chromatography – with ultraviolet/visible detection

8.0 Sample Procedures

8.2 Sampling and measurement SOPs

Noting the study specifics described in following sections, normal product collection, cataloging, and preparation procedures will be conducted per the Product Testing Program (PTP) SOPs:

- PTP001 SOP for Consumer Product Sample Collection and Processing, Version 2 (Wiseman, 2018a)

- PTP002 SOP for Consumer Product Data Entry and Database Use, Version 2 (Wiseman,2018b)

9.0 Laboratory Procedures

9.4 Special method requirements

The contract laboratory performing the formaldehyde analysis will be Ecology-accredited for EPA method 8315A for solid matrices.

The contract laboratory will perform the cryomilling on all solid samples prior to preparation and analysis following their cryomill standard operating procedure.

A cryomill grinding blank will be performed using a sample previously analyzed to be "free" of formaldehyde (< 5 mg/Kg). This sample will be sent the contract laboratory along with the study samples.

10.0 Quality Control Procedures

10.1 Table of field and laboratory quality control

Table 5. Field and lab QC samples, type, and frequency.

Analyte	Matrix	Field		Laboratory				
		Blanks	Replicates	LCS	Method Blanks	Lab Duplicates	Matrix Spike	Grinding Blanks
Formaldehyde	Solids	n/a	1/batch	1/batch	1/batch	1/batch	1/batch	1/batch
Formaldehyde	Liquids	n/a	1/batch	1/batch	1/batch	1/batch	1/batch	n/a

LCS = Laboratory control sample
Batch = 20 samples or fewer

13.0 Data Verification

13.2 Lab data verification

Contract laboratory data packages will be assessed by Manchester Environmental Laboratory QA Coordinator following the EPA National Functional Guidelines for Organic Data Review (EPA, 2014).

The project manager will be responsible for the final review and acceptance of the data.

15.0 References

EPA, 2014. National Functional Guidelines for Superfund Organic Methods Data Review. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation, Washington, DC. Publication Number EPA-540-R-014-002.

Sekerak, S., 2016a. Quality Assurance Project Plan: Product Testing Program, Version 1.0. Washington State Department of Ecology, Olympia, WA. Publication No. 16-03-113. https://fortress.wa.gov/ecy/publications/SummaryPages/1603113.html

Sekerak, S., 2016b. An Assessment of Children's Safe Products Act Data: Addendum to Quality Assurance Project Plan: Product Testing Program, Version 1.0. Washington State Department of Ecology, Olympia, WA. Publication No. 16-03-121. https://fortress.wa.gov/ecy/publications/SummaryPages/1603121.html

Sekerak, S., 2017. Formaldehyde, D4, MEK, and Styrene in Children's Products. Washington State Department of Ecology, Olympia, WA. Publication No. 17-03-020. https://fortress.wa.gov/ecy/publications/SummaryPages/1703020.html

Wiseman, C., 2018a. Standard Operating Procedure for Consumer Product Sample Collection and Processing, Version 2. Document No. PTP001.

Wiseman, C.,2018b. Standard Operating Procedure for Consumer Product Data Entry and Database Use, Version 2. Document No. PTP002.