

SEP 09 2014



UNITED STATES DEPARTMENT OF COMMERCE
Office of the General Counsel
Washington, D.C. 20230

MEMORANDUM FOR: Urayna Knowles
Reimbursable Group Leader
Finance Division
National Institute of Standards and Technology

FROM: Barbara S. Fredericks
Assistant General Counsel for Administration

A handwritten signature in black ink, appearing to read "B. Fredericks", written over the typed name.

SUBJECT: Revised Agreement between the National Institute of Standards and Technology (NIST) and the Consumer Product Safety Commission (CPSC) (RACO Tracking #1406-732-11)

This provides clearance for the attached revised agreement between NIST and CPSC.¹

Pursuant to a prior agreement between the parties (RACO Tracking #1307-732-08, cleared by this office on August 9, 2013), CPSC transferred funding to NIST to develop testing and measurement protocols to determine the quantities and properties of compounds released from spray polyurethane foam (SPF) as it is applied in residential settings. The instant agreement transfers an additional \$100,000 in FY14 one-year funds to NIST for six new tasks related to this project. NIST will provide CPSC with a report on these tasks at the end of period of performance. The agreement will become effective when signed by both parties and will terminate ten months thereafter.²

The agreement is authorized by section 29(d) of the Consumer Product Safety Act, 15 U.S.C. § 2078(d), which authorizes CPSC to "utilize the resources and facilities of the National Institute of Standards and Technology, on a reimbursable basis, to perform research and analyses related to risks of injury associated with consumer products (including fire and flammability risks), to develop test methods, to conduct studies and investigations, and to provide technical advice and assistance in connection with the functions of the Commission." NIST has programmatic authority pursuant to 15 USC § 272(b)(8), (b)(10), (b)(11), and (c)(8).

If you have any questions regarding this matter, please contact Lydia Grunstra of my staff at 202-482-6113.

Attachment

cc: RACO/NIST

¹ The document was originally submitted to our office as an amendment to an existing agreement (RACO Tracking #1307-732-08). However, because the underlying agreement expired before the amendment was signed, the amendment was redrafted as an agreement in its own right.

² Because CPSC has determined this work to be non-severable, CPSC's funds may properly be used for work that extends through FY15, despite the funds' September 30, 2014 expiration date.

**CPSC-I-14-0023
INTERAGENCY AGREEMENT
BETWEEN THE
U.S. CONSUMER PRODUCT SAFETY COMMISSIONS
AND THE
ENGINEERING LABORATORY
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
U.S. DEPARTMENT OF COMMERCE**

1. TITLE

Characterization of Emissions from Spray Polyurethane Foam

2. PURPOSE

This agreement provides funding for Tasks g-l as outlined in section 6. Tasks m, n and o are not covered by this agreement but may be funded in the future by a written modification entered into by both parties. Tasks a-f were funded by a prior agreement between the parties (CPSC-I-13-0016).

3. BACKGROUND

Many homeowners and governments (state and local) are using insulating products at a growing rate, such as SPF, to increase the energy efficiency of their residences and other constructed buildings. Retrofitting or addition of foam insulation in new construction is supported in the United States by Federal efforts, such as tax incentives, and programs like EPA Energy Star and Design for the Environment. Because of these programs and other drivers for more efficient buildings, the foam insulation industry expects to see significant growth in the use of their products over the next few years.

Homes can be insulated with SPF by a contractor hired by the homeowner or by using a do-it-yourself (DIY) kit. SPF is an insulation or sealant product, which is formed via an exothermic chemical reaction between A-side and B-side chemicals. The A-side consists of chemicals, such as methylene diphenyl diisocyanate or toluene diisocyanate. Polyols are part of the B-side chemicals, which also include amine and/or metal catalysts, blowing agents, surfactants, and flame retardants. Amine and/or metal catalysts are used to promote the reaction between polyols and A-side chemicals, which help polyurethane foam cells develop sufficient strength to maintain their structure and resist collapsing. Having SPF installed professionally or through DIY, along with use in arts and craft projects, leads to opportunities for the consumer to be exposed to the chemicals found in the SPF.

In 2009, the Environmental Protection Agency (EPA) contacted CPSC, along with other federal agencies including the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH), to establish a working group to address

potential hazards from the chemicals in SPF during its use. EPA staff became aware of potential hazards from some of the compounds in SPF from a clinical report of a death that occurred from exposure and sensitization to isocyanates released during the application of a polyurethane paint to motor vehicles in an auto shop. Isocyanates are very reactive compounds; thus, exposure to isocyanates is believed to be of greatest concern during and immediately after the application or installation of products containing isocyanates, such as SPF, before they can polymerize or react with other compounds found in the indoor environment.

The CPSC staff, along with EPA and other federal agencies, has received a number of complaints regarding health effects resulting from the installation of SPF in homes. Residents complain of a multitude of effects including severe respiratory irritation, breathing difficulties, dizziness and nausea. In some cases, the effects are so severe that consumers can no longer live in their homes. Because these health effects occur several days to months following the SPF installation in the home, it is unlikely that isocyanates are causing these effects. To try to better understand these health effects, EPA has developed action plans associated with isocyanates, specifically a plan to measuring isocyanates from SPF¹². To determine what other compounds could be causing these health effects from SPF, CPSC contracted with Versar, Inc. to produce a toxicological profile of select amine catalysts found in SPF. Information from this report suggests that amine emissions may be the cause of these long term health effects. Also, anecdotal information suggests that aldehyde emissions may also add to these described health effects.

CPSC staff and its federal partners met with members from the Center for the Polyurethanes Industry (CPI) of the American Chemistry Council (ACC), and they provided exposure data on some high-pressure and low-pressure SPF systems. As a result of these exposure studies, the CPI recommends that homeowners leave the premise during SPF installation and not return until 24 hours after the installation. However, CPSC Staff is not satisfied with the robustness of the data that was provided and questions the sufficiency of the 24-hour re-entry time. CPSC, along with its federal partners, needs to perform exposure studies that include measuring exposure levels (1) at different distances from the spray source, (2) on a time course, (3) under varied air change rates, and (4) from SPF that is not mixed correctly. The results of these studies will allow CPSC staff to make adequate determinations of the potential health impacts of SPF insulation products and provide guidance to consumers on their safe use.

The results of these studies may also contribute to the development of voluntary standards. There are work items under the ASTM Indoor Air Quality (D22.05) subcommittee to standardize test methods for spraying, sampling, and packaging SPF insulation products and to measure emissions from these products. ASTM WK30960 is entitled: New Practice for Spraying, Sampling, and Packaging Spray Polyurethane Foam (SPF) Insulation Samples for Environmental Chamber Emissions Testing. Two new work items (WK 40292 and 40293) concern SPF and testing methods. Currently, there are no standardized test methods that adequately address measuring the chemical emissions of SPF insulation products. These standards will help address that need.

¹<http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/tdi.html>

²http://www.epa.gov/dfe/pubs/projects/spf/spray_polyurethane_foam.html

4. AUTHORITY

The authorities for this agreement are:

FOR CPSC:

CPSC's programmatic authority includes Section 29(d) of the Consumer Product Safety ACT, (15 U.S.C. 2078(d)), which states that The Commission shall, to the maximum extent practicable, utilize the resources and facilities of the National Bureau of Standards (now the National Institute of Standards and Technology) on a reimbursable basis, to perform research and analyses related to risks of injury associated with consumer products (including fire and flammability risks), to develop test methods, to conduct studies and investigations, and to provide technical advice and assistance in connection with the functions of the Commission.

FOR NIST:

NIST possesses programmatic authority to conduct the requested work pursuant to 15 U.S.C. § 272(b)(8), (b)(10), and (b)(11) and (c)(8), which authorizes NIST to develop fundamental methods for testing materials, mechanisms, structures, equipment, and systems, including those used by the Federal Government; to cooperate with other departments and agencies of the Federal Government, with industry, with State and local governments, with the governments of other nations and international organizations, and with private organizations in establishing standard practices, codes, specifications and voluntary consensus standards; to advise government and industry on scientific and technical problems; to study and develop fundamental scientific understanding and improved measurement, analysis, synthesis, processing, and fabrication methods for chemical substances and compounds, ferrous and nonferrous metals, and all traditional and advanced materials, including process of degradation.

5. COST AND TRANSFER OF FUNDS

The U.S. Consumer Product Safety Commission will transfer \$100K to NIST as reimbursement for undertaking the activities contemplated by this agreement. This transfer is to be made in advance. NIST will be reimbursed for all actual costs in providing the contemplated service. NIST must obtain approval from CPSC prior to incurring any costs that would exceed the \$100K agreed to herein. Any such approval shall be memorialized in an amendment to this IAG prior to any additional costs being incurred. No NIST contractors, no students or U.S. citizens working under a financial assistance award will perform work under this agreement. Only NIST employees will perform work under this agreement.

The funds will be allocated within NIST as follows:

Labor, including all overhead	\$80K
Laboratory supplies and materials (including overhead)	\$20K

6. STATEMENT OF WORK

The primary objective of this work is to characterize and quantify specific compounds, primarily amine catalysts and aldehydes (e.g., formaldehyde), that are expected to be released from SPF samples.

Work to be undertaken and deliverables to be provided:

g. Indoor concentration estimation from microchamber emission results

NIST will perform an analysis of SPF emission rates (measured under the base agreement in a microchamber) and indoor concentrations measured in the NIST netzero research house. The purpose of this analysis will be to determine if how and how well microchamber data can be used to estimate indoor concentrations in an actual residential facility.

h. Experimental Testing – closed cell foam

In order to determine appropriate closed cell foam sampling times for ASTM standards currently under development, NIST will conduct microchamber testing of a closed cell, high pressure SPF sample. If possible, this foam will be acquired from a field installation. The acquisition of these samples will be coordinated by CPSC. These tests will focus on amine catalysts, flame retardant and aldehydes emitted from SPF samples measured after approximately 24 hours of aging under controlled laboratory conditions.

i. Experimental Testing – Non-ideal foam

NIST will conduct chamber testing of an SPF sample obtained from foam that is installed under non-ideal circumstances such as application temperature and component mixing. The acquisition of these samples will be coordinated by CPSC. These tests will focus on amine catalysts and aldehydes emitted from SPF samples measured after approximately 24 hours of aging under controlled laboratory conditions.

j. Standards Development

NIST will participate in the activities within ASTM subcommittee D22.05 Indoor Air Quality to develop consensus standards on the measurement of SPF emissions.

k. Experimental Testing – Standard Support Tests

In order to help validate ASTM standards related to SPF emissions currently under development, NIST will conduct experiments to determine the impact of relative humidity on SPF emission rates after 48 hours at 40 °C. In addition, NIST will conduct recovery experiments for Tris-(1-chloro-2-propyl) phosphate (TCPP) from the micro-chambers at 40 °C. NIST will work with sample tube manufacturers to coordinate research to determine breakthrough volumes for sampling of amines and TCPP on Tenax at 40°C.

1. Letter Report

NIST will prepare a letter report containing the results of tasks a through e above. The report shall be due by June 30, 2015.

m. Additional experiment testing of non-ideal foams

NIST will conduct chamber testing of SPF samples obtained from foam that is installed under non-ideal circumstances such as application temperature and component mixing. The acquisition of these samples will be coordinated by CPSC in cooperation with NIST. These tests will focus on amine catalysts and aldehydes emitted from SPF samples measured after approximately 24 hours of aging under controlled laboratory conditions.

n. Exposure calculations

NIST will study existing information to support exposure calculations that can relate microchamber emission measurements to potential indoor exposure in residential settings. This analysis may consider the impacts in house characteristics, transport through envelope materials, weather conditions and SPF emission rates.

o. Final Report

NIST will prepare a final technical report containing the results of all work performed under this agreement. This report shall be due 10 months from the date of last signature.

An interim report will be delivered to CPSC by September 30, 2014.

7. SCHEDULE (covering tasks g through o)

Months 1-2

Perform analysis of indoor concentrations based on SPF microchamber data (task g)

Months 3-4

Develop plan for acquisition of SPF samples.

Months 4-7

Perform experimental testing (tasks h and k)

Month 8-10

Preparation of letter report (task l).

The ASTM subcommittee activities under task d will occur throughout the project schedule.

7. FUNDING AND ACCOUNTING DATA

The transfer of funds shall be from CPSC to NIST through the On-Line Payment Collection (OPAC) system using the following accounting data:

Transfer From: CPSC BETC: DISB Taxpayer ID Number (TIN): 520978750
Agency Location Code (ALC): 61000001 DUNS: 069287522 US

Treasury Code: 61140100 AMOUNT: \$100,000.00
ACCOUNTINGDATA: 0100A14DSE 2014 2325900000 EXHR004000 253I0

To: NIST BETC: COLL Taxpayer ID Number (TIN: 530-20-5706 Agency Location Code (ALC): 13-06-0001 DUNS 929956050 US Treasury Code: 13X4650
Treasury Account Symbol (TAS)/Appropriation Code: NIST: 13 X 4650

8. DURATION OF AGREEMENT AND AMENDMENTS

This agreement will become effective when signed by the parties. The agreement will terminate 10 months from the effective date, but may be amended at any time by mutual written consent of the parties.

9. TERMINATION AND CANCELLATION CLAUSE

Any party may terminate this agreement by providing 60 days written notice to the other party. If the CPSC terminates the agreement, NIST is authorized to collect costs incurred prior to cancellation of the order plus any termination costs, up to the total value of the agreement. CPSC shall not be responsible to NIST for costs associated with actions that stem from errors in performing the responsibilities assigned to NIST.

10. RESOLUTION OF DISAGREEMENTS

Disputes related to this agreement shall be resolved in accordance with instructions provided in the Treasury Financial Manual (TFM) Volume I, Part 2, Chapter 4700, Appendix 10, available at <http://www.fms.treas.gov/tfm/index.html>.

11. CONTACTS

The contacts of each party to this agreement are:

NIST FINANCIAL POINT OF CONTACT
Rayna Knowles
Group Leader, Accounts Receivables Group
Finance Division
100 Bureau Drive Stop 1624
Gaithersburg, MD 20899-1624
(301) 975-5183
(301) 975-2100 FAX

Urayana.knowles@nist.gov
NIST ADMINISTRATIVE CONTACT

Jessica Reppert
Administrative Officer Div 732
100 Bureau Drive MS 8602
Gaithersburg, MD 20899-8602
(301) 975-8938
(301) 975-4032 FAX
Jessica.reppert@nist.gov

NIST PROJECT OFFICER

Andrew Persily, Ph.D.
National Institute of Standards and Technology
100 Bureau Drive, MS 8633
Gaithersburg, MD 20899
(301) 975-6418
(301) 975-4409 FAX
andyp@nist.gov

CPSC PROJECT OFFICER

Trey Thomas, Ph.D.
U.S. Consumer Product Safety Commission
Directorate for Hazard Identification and Reduction
5 Research Place
Bethesda, MD 20850
(301) 987-2560
tthomas@cpsc.gov

CPSC LEGAL COUNSEL

Melissa Buford, Supervisory General Attorney
4330 East West Highway
Bethesda, MD 20814
(301) 504-7636
mbuford@cpsc.gov

CPSC PAYMENT OFFICE

CPSC Accounts Payable Branch, AMZ-160
PO Box 25710
Oklahoma City, OK 73125

AGENCY PAYMENT OFFICER

Debbie Young, Agency Payment Officer
Enterprise Service Center
Office of Financial Operations
Federal Aviation Administration
P.O. Box 25710

Oklahoma City, OK 73125
(405) 954-7467
9-AMC-AMZ-CPSC-Accounts-Payable@faa.gov

The parties agree that if there is a change regarding the information in this section, the party making the change will notify the other party in writing of such change.

Approved and Accepted for
Consumer Product Safety Commission

BY: 
Donna Hutton

TITLE: Contracting Officer

DATE: 8/27/2014

Approved and Accepted for National
Institute of Standards and Technology

BY: 
~~Ar Hunter Fannoy~~ David Yashar

Acting
TITLE: Chief, Energy and
Environment Division

DATE: 9/10/14