**SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEM**
*OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, & 30*

| 1. REQUISITION NUMBER | PAGE | OF |
|---|---|---|
| REQ-4500-11-0014 | 1 | 8 |

| 2. CONTRACT NO. | 3. AWARD/ EFFECTIVE DATE | 4. ORDER NUMBER | 5. SOLICITATION NUMBER | 6. SOLICITATION ISSUE DATE |
|---|---|---|---|---|
| CPSC-D-06-0006 | 08/26/2011 | 0015 | | |

| 7. FOR SOLICITATION INFORMATION CALL: | a. NAME | b. TELEPHONE NUMBER (No collect calls) | 8. OFFER DUE DATE/LOCAL TIME |
|---|---|---|---|
| | Greg Grayson | 301-504-7725 | |

**9. ISSUED BY** CODE FMPS

CONSUMER PRODUCT SAFETY COMMISSION
DIV OF PROCUREMENT SERVICES
4330 EAST WEST HWY
ROOM 517
BETHESDA MD 20814

**10. THIS ACQUISITION IS**
☒ UNRESTRICTED OR ☐ SET ASIDE: % FOR:
☐ SMALL BUSINESS ☐ EMERGING SMALL BUSINESS
NAICS: 541690 ☐ HUBZONE SMALL BUSINESS ☐ SOLE SOURCE
SIZE STANDARD: $6.0 ☐ SERVICE-DISABLED VETERAN-OWNED SMALL BUSINESS ☐ 8(A)

| 11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED | 12. DISCOUNT TERMS | 13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700) | 13b. RATING | 14. METHOD OF SOLICITATION |
|---|---|---|---|---|
| ☐ SEE SCHEDULE | Net 30 | ☐ | | ☒ RFQ ☐ IFB ☐ RFP |

**15. DELIVER TO** CODE HS

CONSUMER PRODUCT SAFETY COMMISSION
DIRECTORATE FOR HEALTH SCIENCES
4330 EASTWEST HIGHWAY
ROOM 600
BETHESDA MD 20814

**16. ADMINISTERED BY** CODE FMPS

CONSUMER PRODUCT SAFETY COMMISSION
DIV OF PROCUREMENT SERVICES
4330 EAST WEST HWY
ROOM 517
BETHESDA MD 20814

**17a. CONTRACTOR/ OFFEROR** CODE [redacted] FACILITY CODE

VERSAR INC
ATTN PAUL KENDALL
6850 VERSAR CENTER STE 1
SPRINGFIELD VA 22151-4196

TELEPHONE NO. (703) 642-6849

**18a. PAYMENT WILL BE MADE BY** CODE FMFS

CPSC Accounts Payable Branch
AMZ 160
P. O. Box 25710
Oklahoma City OK 73125

☐ 17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER

☐ 18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a UNLESS BLOCK BELOW IS CHECKED ☐ SEE ADDENDUM

| 19. ITEM NO. | 20. SCHEDULE OF SUPPLIES/SERVICES | 21. QUANTITY | 22. UNIT | 23. UNIT PRICE | 24. AMOUNT |
|---|---|---|---|---|---|
| | DUNS Number: [redacted]<br>Project Officer:<br>Melanie Biggs (301) 504-7858<br>MBiggs@cpsc.gov<br><br>TASK ORDER 0015<br><br>The contractor shall provide Toxicology Review Services in accordance with CPSC-D-06-0006, line item 0010 and the attached description of services.<br>*(Use Reverse and/or Attach Additional Sheets as Necessary)* | | | | |

**25. ACCOUNTING AND APPROPRIATION DATA**
0100A11DPS-2011-2325900000-EXHR004500-252D0

**26. TOTAL AWARD AMOUNT** *(For Govt. Use Only)*
$39,380.82

☐ 27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4. FAR 52.212-3 AND 52.212-5 ARE ATTACHED. ADDENDA ☐ ARE ☐ ARE NOT ATTACHED.
☐ 27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4. FAR 52.212-5 IS ATTACHED. ADDENDA ☐ ARE ☐ ARE NOT ATTACHED.

☐ 28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN _____ COPIES TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED HEREIN.

☒ 29. AWARD OF CONTRACT REF. _____ OFFER DATED _____. YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS:

| 30a. SIGNATURE OF OFFEROR/CONTRACTOR | 31a. UNITED STATES OF AMERICA *(SIGNATURE OF CONTRACTING OFFICER)* |
|---|---|
| | Rudi M. Johnson |

| 30b. NAME AND TITLE OF SIGNER *(Type or print)* | 30c. DATE SIGNED | 31b. NAME OF CONTRACTING OFFICER *(Type or print)* | 31c. DATE SIGNED |
|---|---|---|---|
| | | Rudi M. Johnson | 8/27/11 |

AUTHORIZED FOR LOCAL REPRODUCTION
PREVIOUS EDITION IS NOT USABLE

**STANDARD FORM 1449 (REV. 3/2005)**
**Prescribed by GSA - FAR (48 CFR) 53.212**

| 19. ITEM NO. | 20. SCHEDULE OF SUPPLIES/SERVICES | 21. QUANTITY | 22. UNIT | 23. UNIT PRICE | 24. AMOUNT |
|---|---|---|---|---|---|
| 0001 | Toxicological Reviews - Amines in Spray Polyurethane Foam | 362 | HR | 105.61 | 38,230.82 |
| 0002 | Other direct cost associated with review of Amines in Spray Polyurethane Foam | 1 | EA | 1,150.00 | 1,150.00 |
| | The total amount of award: $39,380.82. The obligation for this award is shown in box 26. | | | | |

32a. QUANTITY IN COLUMN 21 HAS BEEN

☐ RECEIVED ☐ INSPECTED ☐ ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED:

| 32b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE | 32c. DATE | 32d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE |
|---|---|---|
| | | |

| 32e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE | 32f. TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE |
|---|---|
| | 32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE |

| 33. SHIP NUMBER | 34. VOUCHER NUMBER | 35. AMOUNT VERIFIED CORRECT FOR | 36. PAYMENT | 37. CHECK NUMBER |
|---|---|---|---|---|
| ☐ PARTIAL ☐ FINAL | | | ☐ COMPLETE ☐ PARTIAL ☐ FINAL | |

| 38. S/R ACCOUNT NUMBER | 39. S/R VOUCHER NUMBER | 40. PAID BY |
|---|---|---|
| | | |

| 41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT | | 42a. RECEIVED BY *(Print)* |
|---|---|---|
| 41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER | 41c. DATE | 42b. RECEIVED AT *(Location)* |
| | | 42c. DATE REC'D *(YY/MM/DD)* / 42d. TOTAL CONTAINERS |

## TASK DESCRIPTION

### Amines in Spray Polyurethane Foam

### 1. Background

Many homeowners and governments are expected to use insulating products, such as spray foams, to increase the energy efficiency of their residences and constructed buildings. Homes can be insulated with spray polyurethane foam (SPF) by hiring a contractor to do the work or by homeowners using a do-it-yourself (DIY) kit. SPF has also been used by consumers for arts and crafts projects.

The final foam product is formed by an exothermic chemical reaction between approximately equal amounts of methylene diphenyl diisocyanate (MDI) or MDI-based isocyanates and a mixture of polyols and other chemicals (i.e., catalysts, blowing agents, fire retardants, or surfactants), which are referred to as the A- and the B-sides, respectively. Catalysts promote the reaction between these two sides by helping the polyurethane foam cells develop sufficient strength to maintain their structure to resist collapsing or becoming deformed and completing the reaction or "curing" the finished foam. Most catalysts used in SPF are amine-based with the B-side typically containing 1 to 5% amine catalyst. Respirators and other protective equipment are recommended to minimize exposure to vapors, aerosols, and particulates of MDI and other chemicals during the spray application and subsequent operations.

Along with the energy-saving benefits of SPF, there are significant questions about the potential health effects that this material may have on those applying the foam as well as the occupants of the buildings treated with SPF. The U.S. Consumer Product Safety Commission (CPSC) has received several complaints from homeowners after SPF was installed either by a contractor or by themselves. These complaints include lingering odors in the house, respiratory-related problems (i.e., asthma, coughing), irritation (i.e., eyes, throat), and headaches.

CPSC staff has had first focused its attention on the diiosocyantes in SPF as the chemicals potentially causing these reported health effects. The constituents that make up the A-side have generally been considered to present the greatest potential hazard due to their well-known potential to produce respiratory and dermal sensitization (isocyanates are believed to be a leading cause of work-related asthma); however, isocyanates are very reactive. Therefore, the odors identified after SPF installation may not be due to the isocyanates but to the chemicals making up the B-side, such as amine catalysts. Also, overexposure to airborne concentrations of amine catalysts may result in irritation or sensitization of the respiratory system, skin, and eyes. Inhalation exposure may also cause a reversible effect known as glaucopsia, "blue haze", or "halovision" in the eyes. Glaucopsia is characterized by clouding or fogging of vision due to swelling of the outer layer of the cornea. Once the exposure is removed, vision is gradually restored. In general, exposure limits are not yet established for the majority of the amine catalysts used in SPF systems.

Within a few minutes of application, the foam achieves a tack-free state when the foam surface is no longer sticky. Depending on the characteristics of the foam, such as the composition of the B-side chemicals, the heat dissipated during the exothermic reaction, and ambient conditions (temperature and humidity), it can take an additional 23 to 72 hours before the foam is fully

cured and the optimum physical properties of the foam are achieved. Because some of the compounds in the A- and B-sides are expected to exist unreacted in the foam (e.g., certain catalysts and blowing agents), they may potentially be emitted from the installed foam and cause the noted health effects. Also, an improper balance in mixing of the A- and B-sides may also lead to off gassing. It is typically recommended that entire residential and smaller commercial buildings or portions of large commercial buildings be vacated during the installation of SPF due to the potential hazards caused by these unreacted compounds. Furthermore, SPF, like many other new building materials, can emit low levels of various chemicals for a short period of time following installation. Therefore, the time at which people reoccupy a building following the completion of SPF installation is an important consideration. The suggested reoccupancy times for an interior application using a DIY kit or a two-component high-pressure SPF is commonly 8 and 24 hours, respectively; however, this varies based to the variables mentioned above.

**2. Objective**

The objectives of this task are to summarize the available toxicological and exposure data on the amine catalysts found in most SPF formulations.

**3. Description of Task**

The Contractor will:

- Meet with the Project Officer by phone or in person prior to beginning the task.
- Meet with the Project Officer either by phone or in person following the completion of each of the subtasks listed below to discuss progress on the task. The scope of the task may need to be narrowed or expanded, as appropriate.

(1) Select and obtain references for all of the selected amine catalysts that are involved in SPF manufacturing by including data relating to relevant physico-chemical properties **and** the potential for human toxicity and exposure.

- The CPSC staff will provide a list of 5 amine catalysts that are most commonly used in SPF formulations by Chemical Abstracts Service (CAS) number. The Contractor will consider synonyms and chemical names in addition to the CAS number.

- The Contractor may rely on authoritative reviews for general toxicity and physio-chemical information, but should review key references on health effects. Key references include those that identify no adverse effect levels, lowest adverse effect levels, or dose response information for carcinogenicity, reproductive/developmental effects, acute organ toxicity, or chronic organ toxicity.

- The Contractor shall provide estimates for the outlined work covering the 5 amine catalysts on a per chemical basis.

- In reviewing the toxicity data, a higher priority will be given to studies relating to human toxicity. This will include data in humans, animal studies, and *in vitro* studies.

(2) After consulting with the CPSC Project Officer, summarize the relevant references into a report for each amine.

- Reports shall break discussion points into the following format where possible. This format is not all inclusive and can be added to or subtracted from when information does or does not exist.

    - 1. Introduction
    - 2. Physico-chemical Characteristics
        - to include basic physico-chemical data, CAS numbers, chemical names, trade names, and synonyms as identified in ChemIDplus (http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp)
    - 3. Manufacture, Supply, and Use
    - 4. Toxicokinetics
        - Absorption
        - Distribution
        - Metabolism
        - Excretion
    - 5. Hazard Information
        - Acute Single Dose Toxicity
            - Acute oral toxicity
            - Acute dermal toxicity
            - Acute inhalation toxicity
            - Primary skin irritation
            - Primary eye irritation
            - Respiratory irritation
            - Sensitization
        - Acute, Subchronic, and Chronic Single- and Repeat-Dose Toxicities
            - Mortality
            - General effects (i.e., food or water consumption, body weight, clinical signs)
            - Gastrointestinal toxicity
            - Hepatotoxicity
            - Renal toxicity
            - Neurotoxicity
            - Respiratory toxicity
            - Endocrine activity
            - Thyroid toxicity
            - Reproductive toxicity
            - Prenatal, perinatal, and post-natal toxicity
            - Carcinogenicity
                - Genotoxicity
                - Initiation and promotion
                - Carcinogenicity studies
        - Lowest Hazard Endpoints by Organ System and Exposure Duration
        - Overall Uncertainty

- 6. Exposure
- 7. Discussion
- 8. References

- Sections under "Hazard Information" should also discuss dosing duration (i.e. Acute, Subchronic, Chronic) when the information exists.

- Copies of references cited and the report(s) will be made available to the CPSC Project Officer in electronic form where possible or paper form where electronic form is not available.

- The report is subject to CPSC clearance procedures. The Contractor will work with the CPSC Project Officer to address comments from CPSC reviewers.

**4. Deliverables or Performance**

The Contractor shall provide the requested information in the form of a written report for each amine to the CPSC Project Officer within one hundred and twenty (120) days after the CPSC Project Officer provides the CAS numbers for the selected amine catalysts to be evaluated. The report shall be in the format of a scientific report with full citations, tables, and figures as discussed above. The Contractor shall e-mail the report to the CPSC Project Officer in a Microsoft Word (preferred) or WordPerfect file.

## 5. Delivery Schedule

| Item(s) | Quantity | Delivery or Performance |
|---|---|---|
| The CPSC Project Officer and Contractor will meet in person or by phone to discuss and initiate the project. | 1 | By August 30, 2011 |
| The CPSC Project Officer will be available to consult with the Contractor by teleconference or in person. | As appropriate | At the completion of each subtask, or monthly, whichever comes first. |
| The CPSC Project Officer shall provide a list of 5 amine catalysts in SPF to the Contractor. | 1 | Within 15-30 days after the initial teleconference or meeting |
| The Contractor shall submit draft reports in electronic format to the CPSC Project Officer. | 1 | Within 90 days after receipt of the selected amines. |
| The CPSC Project Officer will provide type-written comments or a document edited by "Track Changes" on the draft report to the Contractor. | 1 | Within 30 days after receipt of the draft reports. |
| The Contractor shall submit electronic draft final reports to the CPSC Project Officer. | The Contractor will revise the draft final reports as appropriate. | Within 30 days after receipt of comments. |
| The CPSC Project Officer will submit the draft final report for CPSC clearance. | 1 | Within 1 week following receipt. |
| The CPSC Project Officer will provide type-written comments or a document edited by "Track Changes" on the draft final reports to the Contractor. | 1 | Within 1 week following receipt. |
| The Contractor will provide final reports | 1 | Within 10 days after receipt of comments. |
| Inspection and Acceptance of the final reports | The final reports will be reviewed by the CPSC Project Officer | Within 30 days after receipt of the reports. |

**6. Place of Delivery**

U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814

CPSC Project Officer and contact information:
Melanie B. Biggs, Ph.D.
mbiggs@cpsc.gov
301-504-7858

**7. Inspection and Acceptance**

The Draft Final Toxicity and Exposure Review reports submitted to the CPSC will be reviewed within 30 days of receipt of the draft reports for any additional questions and/or comments. If returned to the Contractor as a result of the review, the Contractor shall address and/or revise their reports accordingly and return the final versions to the Project Officer within 30 days of receipt. The CPSC Project Officer will then have an additional 30 days to review the Final Toxicity and Exposure Review reports.

**8. Requirement for CPSC Clearance and Disclosure of Information**

The final reports are the property of the CPSC. The Contractor will not publish the final reports, present the information at scientific meetings, or in any other way make the findings public in any form (written or verbal) without the written permission of the Project Officer. Any publication must be cleared following CPSC procedures, as outlined in the Consumer Product Safety Act.