**DEPARTMENT OF HEALTH AND HUMAN SERVICES**  
Public Health Service  
Centers for Disease Control and Prevention  
INTER/INTRA-AGENCY AGREEMENT (IAA)  
RECEIVING AGENCY (CMS)

<table>
<thead>
<tr>
<th>1. CDC ACF:</th>
<th>2. PROCURING AGENCY:</th>
<th>3. TYPE OF AGREEMENT:</th>
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<tr>
<td>10-17</td>
<td>CPSC-4-10-0006</td>
<td>Act 1</td>
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</tbody>
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4. TITLE OF PROJECT: 
**Exposure Assessment of Silver Nanoparticles in Treated Products**

5. NAME AND ADDRESS OF PROCURING AGENCY:  
U.S. Consumer Product Safety Commission  
Office of Hazard Identification and Reduction  
4330 East West Highway  
Bethesda, MD 20814  
DUNS #: 69287522

6. DESCRIPTION OF WORK:  
*Please attach*

7. NAME AND ADDRESS OF PRODUCING AGENCY:  
NIOSH Division of Respiratory Disease Studies  
1055 Willowdale Road  
Morgantown, WV 26505  
DUNS #: 427555

8. AMOUNT:  
*Not to exceed without written modification: $ 46,380.00*

9. BUDGET PERIOD:  
From 10/01/2010 to 09/30/2011

10. AUTHORITY (CDC):  
*Other: Procurement*  
Public Health Service Act

11. AUTHORITY (Procuring Agency):  

12. CDC FUNDING INFORMATION:  
**Tentative Federal Appropriation:** 751,000
  
13. PROCUREMENT AGENCY BILLING REQUIREMENTS:  
**Tentative Federal Appropriation:** 6-100 (1 year funds)

14. ADDITIONAL BILLING REQUIREMENTS OF THE PROCURING AGENCY:  
None

15. PROCUREMENT AGENCY BILLING CONTACT:  
Name: Deborah Fratantoni  
Phone: (301) 504-7130

16. OTHER REQUIREMENTS:  
A. Travel under this agreement is subject to allowances authorized in accordance with Federal Travel Regulations, Joint Federal Travel Regulations, and/or Foreign Service Regulations.

B. Unless otherwise requested by the procuring agency, CDC will retain title to any equipment procured in order to provide services.

17./lic/acceptance:  
**Please print**  
Name: Ray Duras  
Title: Associate Director for Planning and Performance, NIOSH

18. PROCUREMENT AGENCY ACCEPTANCE:  
**Please print**  
Name: Donna Hutton  
Title: Director, Division of Procurement Services, CPSC

Signature: [Signature]
Date: [Date]
I. INTRODUCTION

The U.S. Consumer Product Safety Commission, hereinafter referred to as CPSC, and the Centers for Disease Control and Prevention, National Institutes for Occupational Safety and Health, hereinafter referred to as NIOSH, hereby agree that NIOSH, subject to the terms and conditions herein, shall measure the release of silver from nanoparticle-containing consumer products and model exposure potential for occupational use scenarios.

II. TITLE

Simulated Worker Exposure to Silver from use of Nano-Enabled Consumer Products

III. BACKGROUND

The unique properties of nanosilver are being exploited for use in consumer products such as cleaners; personal hygiene; laundry detergents; paints; textiles; and medical devices. Health effects associated with silver vary with the chemical form (metallic, salt) and the route of exposure (ingestion, inhalation, and dermal contact). Understanding and, where necessary, reducing, potential exposures to consumers from use of nanosilver-enabled products is critical for promoting public health; however, the mechanisms and forms of silver released from products containing nanosilver are poorly understood.

Available studies on nanosilver indicate exposure potential from some nanosilver-enabled textiles; however, the methodologies used had little relevance to occupational use scenarios. In the proposed study, scientifically defensible methods will be used to evaluate the release of silver from consumer products and model exposure potential.

The major output of this project will be increased understanding of exposure potential from use of nanosilver-enabled products by the public and workers, which is an area of high mutual interest to both the CPSC and NIOSH. Results of this study will provide much needed data on levels of exposure to nanosilver from
consumer products and materials found in occupational settings via relevant pathways.

**IV. PURPOSE AND OBJECTIVES**

The purpose of this study is to use scientifically defensible methods to evaluate the release of silver from consumer products and model exposure potential. NIOSH will test the broad hypothesis that silver is released from nanosilver-enabled products under conditions of intended use in the work environment.

**V. STATEMENT OF WORK**

The project aims are:

1. determine whether each of 16 different products (obtained in FY10) contain silver nanoparticles;
2. for a sub-set of products that contain silver nanoparticles, evaluate the form of silver released under simulated conditions of intended use; and
3. identify pathways of occupational exposure potential (ingestion, dermal, and/or inhalation routes) from use of these products.

NIOSH will:

1. Determine whether each product contains nanosilver;
2. Measure the form of silver (soluble, metallic) that is released from the product under conditions of intended use - nanoform or large agglomerates; and
3. Model pathways of exposure (ingestion, dermal, and/or inhalation routes) from use of these products.

Available literature was reviewed to identify scientifically credible analytical methods for determination of silver content (mass, size, morphology) in textiles, paints, and other product matrices (specific aim #1). For those products that contain nanosilver, the chemical form (Ag\(^0\), Ag\(^+\)) and physicochemical properties (morphology, size, chemistry) of material released from the products during simulated use activities will be measured using appropriate analytical techniques (specific aim #2). Finally, for those products that release nanosilver during use, exposures will be modeled for relevant pathways (specific aim #3).

Products of this research will include information applicable to the CPSC, NIOSH, other Federal agencies (e.g., EPA), and the broader environmental health and safety (EHS) community:
1. scientifically-credible protocols for evaluating engineered nanomaterial release from consumer products;

2. exposure pathway analyses for nano-enabled consumer products; and

3. development of a better understanding of pertinent factors for potential nanomaterial-induced health outcomes in the non-occupational and occupational environments.

VI. NIOSH FURNISHED MATERIALS/EQUIPMENT

NIOSH agrees to furnish all necessary personnel, equipment, materials, services, and facilities to complete the objectives listed in Section V.

Travel under this agreement is subject to allowances authorized in accordance with Federal Travel Regulations, Joint Federal Travel Regulations, and/or Foreign Service Regulations.

Unless otherwise requested by the procuring agency, CDC will retain title to any equipment procured in order to provide service.

No equipment will be purchased as part of this IAG.

VII. NONDISCLOSURE OF DATA

NIOSH agrees that it and its employees will not disclose any data obtained or developed under this IAG to third parties without the consent of the U. S. Consumer Product Safety Commission Contracting Officer.

VIII. REPORTING REQUIREMENTS

NIOSH will provide preliminary test reports documenting the test protocols and resulting data at the completion of each task. Within 60 days of completion of the testing, NIOSH will issue a draft final report for CPSC staff review. Following CPSC staff review, NIOSH will have an additional 30 days to deliver the final report summarizing the test data.

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<tr>
<th>DELIVERY ITEM</th>
<th>QUANTITY</th>
<th>PERFORMANCE</th>
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<tbody>
<tr>
<td>A. All recorded test data and findings</td>
<td>2 copies</td>
<td>Within 7 days of completion</td>
</tr>
<tr>
<td>B. Representative photographs</td>
<td>2 copies</td>
<td>Within 7 days of completion</td>
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IX. PERIOD OF PERFORMANCE

The period of performance shall begin on the effective date and shall not extend beyond December 31, 2011. This agreement may be modified or cancelled by mutual consent of CPSC and NIOSH.

X. DELIVERY OR PERFORMANCE

All deliverables required under the terms and conditions of this IAG shall be provided to the CPSC. The activities planned under this agreement are expressly subject to the availability of funds and other necessary resources to the parties. The following items shall be performed or delivered in accordance with the following schedule:

Month 3 – Complete determination of silver in products
Month 12 – Complete measurements of silver release from products
Month 12 – Complete modeling of exposures from use of products
Month 12 – Submit final report

The period of performance for this agreement is from the date of signature by both parties through December 31, 2011.

XI. DISAGREEMENTS

In the event that the CPSC and NIOSH have a disagreement arising under this Interagency Agreement, then the parties shall cooperatively seek to resolve the disagreement by themselves. If the disagreement cannot be resolved between them, then the parties agree to seek the assistance of a third party in resolving the disagreement.

XII. LIASON OFFICERS

a. NIOSH PROJECT OFFICER
   Aleks Stefaniak, Ph.D.
   Research Industrial Hygienist
   NIOSH/DRDS/LRB
   1095 Willowdale Road, MS 4020
   Morgantown, WV 26505
   Phone: 304-285-6302
   Fax: 304-285-6321
   astefaniak@cdc.gov
b. CDC/NIOSH FMO BUDGET ANALYST

Tonya Jacquez
Budget Analyst
CDC/OD/OCOO/FMO
1095 Willowdale Road, MS 4020
Morgantown, WV 26505
Phone: 304-285-6173
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a. CPSC PROJECT OFFICER
Treyle A. Thomas, Ph.D.
U.S. Consumer Product Safety Commission
Office of Hazard Identification and Reduction
4330 East West Highway,
Bethesda, MD 20814
Phone: (301) 504-7738
ttthomas@cpsc.gov

b. CPSC FINANCIAL OFFICER
Ms. Deborah Peebles Hodge
U.S. Consumer Product Safety Commission
4330 East West Highway,
Bethesda, MD 20814
Phone: (301) 504-7130

XIII. COST AND TRANSFER OF FUNDS

CPSC will provide $46,380 in FY 2011 to support the activities described in this agreement.

XIV. FUNDING AND ACCOUNTING DATA

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

Transfer From:
CPSC
Taxpayer ID Number (TIN): 520978750
Agency Location Code (ALC): 61-00-0001
DUNS 069287522
US Treasury Code: 6110100
AMOUNT: $ 46,380.00
ACCOUNTING DATA: 0100A11DPS 2011 2370400000 EXHR004500 25310
To:

NIOSH
Taxpayer ID Number (TIN): 586051157
Agency Location Code (ALC): 75090421
DUNS: 927645465
US Treasury Code: 75-11-0943

XV. AUTHORITIES

FOR CPSC:
Section 27(g) of the Consumer Product Safety Act, (15 U.S.C. 2076(g))

FOR NIOSH
The Public Health Service Act.

Approved and Accepted for CDC/NIOSH:

BY: _____________________________
Kelley Durst
Associate Director for Planning and Performance
National Institute for Occupational Safety and Health
2400 Century Parkway NE (4th Floor)
Atlanta, GA 30345
Phone: (404) 498-2500
Fax: (404) 498-2573

Approved and Accepted for CPSC

BY: _____________________________
Donna Hutton
Director, Division of Procurement Services
U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814
Phone: (301) 504-7009
Fax: (301) 504-0628