

**THE HOMELAND SECURITY ADVANCED RESEARCH PROJECTS AGENCY  
(HSARPA)  
SMALL BUSINESS INNOVATION RESEARCH (SBIR) PROGRAM  
PROGRAM SOLICITATION FY04.2**

**HSARPA SBIR WILL NOT ACCEPT CLASSIFIED PROPOSALS**

**Closing Date: 14 July 2004, 4:00pm ET**

**Important Dates:**

- **14 May, 2004:** Pre-solicitation issued
- **14 June, 2004:** Full-solicitation issued
- **14 June, 2004 – 14 July, 2004:** Full-proposals accepted
- **14 July, 2004:** Deadline for receipt of proposals at **4 p.m. ET**

**IMPORTANT**

**Deadline for Receipt:** Proposals must be completely submitted by **4:00 p.m. ET, 14 July 2004**

**No Printed Solicitation Books.** Solicitations are available only in electronic format from the FedBizOpps website, in accordance with the Government Paperwork Elimination Act (GPEA).

**Information.** If you have questions about the HSARPA SBIR program, please submit your questions via the website at <http://www.hsarpasbir.com>

**NOTICE:** For administrative purposes only, submissions to this solicitation will be handled by an HSARPA Support Contractor.

## TABLE OF CONTENTS

	Page
1.0 PROGRAM DESCRIPTION.....	4
1.1 Introduction.....	4
1.2 Three Phase Program.....	4
1.3 Proposer Eligibility and Limitations.....	5
1.4 Research and Analytical Work.....	5
1.5 Conflicts of Interest.....	6
1.6 Questions About SBIR and Solicitation Topics.....	6
2.0 DEFINITIONS.....	6
2.1 Research or Research and Development.....	6
2.2 Small Business.....	7
2.3 Socially and Economically Disadvantaged Small Business.....	7
2.4 Women-Owned Small Business.....	7
2.5 Funding Agreement.....	7
2.6 Subcontract.....	7
2.7 Commercialization.....	8
2.8 Essentially Equivalent Work.....	8
2.9 Historically Underutilized Business Zone (HUBZone) Small Business Concern.....	8
2.10 Service-Disabled Veteran.....	8
2.11 Small Business Concern Owned and Controlled by Service-Disabled Veterans.....	8
2.12 Small Business Concern Owned and Controlled by Veterans.....	8
2.13 United States.....	8
2.14 SBIR Technical Data.....	9
2.15 SBIR Technical Data Rights.....	9
3.0 PROPOSAL PREPARATION INSTRUCTIONS AND REQUIREMENTS.....	9
3.1 Proposal Requirements.....	9
3.2 Proposal Checklist.....	9
3.3 Proprietary Information.....	10
3.4 Limitations on Length of Proposal.....	10
3.5 Phase I Proposal Format.....	10
3.6 Page Numbering and Bindings.....	13
3.7 Phase II Proposal Invitation.....	13
3.8 Phase II Proposal Format.....	14
3.9 False Statements.....	14
4.0 METHOD OF SELECTION AND EVALUATION CRITERIA.....	15
4.1 Introduction.....	15
4.2 Evaluation Criteria - Phase I.....	15
4.3 Evaluation Criteria – Phase II.....	16
4.4 Assessing Commercial Potential of Proposals.....	17
4.5 SBIR Fast Track.....	17
5.0 CONTRACTUAL CONSIDERATIONS.....	19
5.1 Phase I Awards.....	19
5.2 Phase II Awards.....	20
5.3 Phase I Report.....	20
5.4 Commercialization Updates in Phase II.....	21

5.5	Payment Schedule.....	21
5.6	Markings of Proprietary Proposal Information.....	22
5.7	Copyrights.....	23
5.8	Patents.....	23
5.9	Technical Data Rights.....	23
5.10	Contractor Commitments.....	23
5.11	Contractor Registration.....	24
5.12	Invention Reporting .....	25
5.13	Additional Information .....	25
6.0	SUBMISSION OF PROPOSALS .....	25
6.1	Electronic Proposal Submission .....	25
6.2	Notification of Proposal Receipt.....	27
6.3	Information on Proposal Status.....	27
6.4	Debriefing of Unsuccessful Offerors.....	27
6.5	Correspondence Relating to Proposals .....	27
7.0	SCIENTIFIC AND TECHNICAL INFORMATION.....	27
8.0	TECHNICAL TOPICS .....	27
8.1	HSARPA TOPICS -- HSARPA Small Business Fiscal Year 04 Publication 2 .....	29
8.2	HSARPA FY2004.2 Phase I SBIR Checklist.....	39

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# **HSARPA SOLICITATION FOR SMALL BUSINESS INNOVATION RESEARCH**

## **1.0 PROGRAM DESCRIPTION**

### **1.1 Introduction**

The Homeland Security Advanced Research Projects Agency, hereafter referred to as HSARPA, invites small business firms to submit proposals under this solicitation for the Small Business Innovation Research (SBIR) Program. Firms with the capability to conduct research and development (R&D) in any of the topic areas described in Section 8.0, and to commercialize the results of that R&D, are encouraged to participate.

Objectives of the HSARPA SBIR Program include stimulating technological innovation, strengthening the role of small business in meeting research and development needs, fostering and encouraging participation by socially and economically disadvantaged small business concerns in technological innovation, and increasing the commercial application of R&D supported research or R&D results.

The Federal SBIR Program is mandated by the Small Business Innovation Development Act of 1982 (PL 97-219, as amended by PL 106-554). The basic design of the HSARPA SBIR program is in accordance with the Small Business Administration (SBA) SBIR Policy Directive, 2002. The SBIR program presented in this solicitation encourages scientific and technical innovation in areas specifically identified by HSARPA. The guidelines presented in this solicitation incorporate and exploit the flexibility of the SBA Policy Directive to encourage proposals based on scientific and technical approaches likely to yield results important to the homeland security and the private sector.

### **1.2 Three Phase Program**

This program solicitation is issued pursuant to the Small Business Innovation Development Act of 1982 (PL 97-219, as amended by PL 106-554). Phase I is to determine, insofar as possible, the scientific, technical, and commercial merit and feasibility of ideas submitted under the SBIR Program. Phase I awards do not exceed \$100,000 in cost nor extend beyond a six-month period of performance. Proposals should concentrate on that research or research and development which will significantly contribute to proving the scientific, technical, and commercial feasibility of the proposed effort, the successful completion of which is a prerequisite for further HSARPA support in Phase II. The measure of Phase I success includes evaluations of the extent to which Phase II results would have the potential to yield a product or process of continuing importance to DHS and/or the private sector. Bidders are encouraged to consider whether the research or research and development they are proposing to HSARPA also has private sector potential, either for the proposed application or as a base for other applications.

Subsequent Phase II awards will be made to firms on the basis of results of their Phase I and the scientific, technical, and commercial merit of the Phase II proposal. Phase II awards are \$750,000 in cost and do not exceed 24-months period of performance. Phase II is the principal research or research and development effort and is expected to produce a well-defined deliverable prototype. A more comprehensive proposal will be required for Phase II.

Under Phase III, the small business is expected to obtain funding from the private sector and/or non-SBIR Government sources to develop the prototype into a viable product or non-R&D service for sale in Government and/or private sector markets.

Only proposals submitted in response to this solicitation will be considered for Phase I award. Only proposals submitted in response to topics contained in this solicitation will be accepted. Proposers who were not awarded a contract in response to a prior SBIR solicitation are free to update or modify and re-submit the same or modified proposal if it is responsive to any of the topics listed in Section 8.0.

For Phase II, no separate solicitation will be issued and no unsolicited proposals will be accepted. **Only those firms that were awarded Phase I contracts are eligible to participate in Phases II and III.**

HSARPA will invite Phase II Proposals from a group of Phase I awardees to maintain the momentum of the Phase I R/R&D and to accomplish an expeditious review leading to award of a Phase II. Phase II Proposals will be submitted online in accordance with Section 6.0.

HSARPA is not obligated to make any awards under either Phase I, II, or III, and all awards are subject to the availability of funds. HSARPA is not responsible for any monies expended by the proposer before award of any contract.

### ***1.3 Proposer Eligibility and Limitations***

Each proposer must qualify as a small business for research or research and development purposes as defined in Section 2.0 and certify to this on the Cover Sheet of the proposal. In addition, a minimum of two-thirds of the research and/or analytical work in Phase I must be carried out by the proposing firm. For Phase II, a minimum of one-half of the research and/or analytical work must be performed by the proposing firm. The percent of work is usually measured by both direct and indirect costs. For both Phase I and II, the primary employment of the principal investigator must be with the small business firm at the time of the award and during the conduct of the proposed effort. Primary employment means that more than one-half of the principal investigator's time is spent with the small business. Primary employment with a small business concern precludes full-time employment at another organization. For both Phase I and Phase II, all research or research and development work must be performed by the small business concern and its subcontractors in the United States.

Joint ventures and limited partnerships are permitted, provided that the entity created qualifies as a small business in accordance with the Small Business Act, 15 USC 631, and the definition included in Section 2.2.

### ***1.4 Research and Analytical Work***

- a. **For Phase I**, a minimum of two-thirds of the research and/or analytical work must be performed by the proposing firm unless otherwise approved in writing by the contracting officer.
- b. **For Phase II**, a minimum of one-half of the research and/or analytical work must be performed by the proposing firm, unless otherwise approved in writing by the contracting officer. The percentage of work is usually measured by both direct and indirect costs, although proposers planning to subcontract a significant fraction of their work should verify how it will be measured with their contracting officer during contract negotiations.

## ***1.5 Conflicts of Interest***

Awards made to firms owned by or employing current or previous Federal Government employees could create conflicts of interest for those employees in violation of federal law. Such proposers should contact the cognizant Ethics Counselor from the employee's Government agency for further guidance.

## ***1.6 Questions About SBIR and Solicitation Topics***

HSARPA SBIR questions/information.

- a. **Help Desk.** All questions about this solicitation, the proposal preparation and electronic submission should be submitted via the website: <http://www.hsarpasbir.com> Or, call the Help Desk toll free number: 1-800-754-3043.
- b. **HSARPA SBIR website** <http://www.hsarpasbir.com> offers electronic access to the SBIR solicitation, submission of frequently asked questions (FAQs), answers to FAQs, and hyperlinks to other useful information. All Phase I and Phase II proposals must be submitted via the electronic submission website at <http://www.hsarpasbir.com>.
- c. **General questions about HSARPA SBIR Program.** General questions pertaining to the HSARPA SBIR program should be submitted to [faq@hsarpasbir.com](mailto:faq@hsarpasbir.com) or call the HSARPA SBIR Program Contact: Mr. Tim Sharp, SBIR Program Manager, 703-797- 4527.
- d. **Technical Questions about Solicitation Topics.** This solicitation is issued for pre-release on the HSARPA Website from 14 May, 2004 through 14 June, 2004,. During this time, you may email topic questions to [faq@hsarpasbir.com](mailto:faq@hsarpasbir.com), before you prepare a proposal for the FY04.2 solicitation. Technical questions will be researched and answers provided in a timely manner. Contact with HSARPA after the 14 June, 2004, pre-solicitation closing date, is restricted for reasons of competitive fairness, and therefore, all written questions submitted to [faq@hsarpasbir.com](mailto:faq@hsarpasbir.com) will be answered and posted electronically for general viewing to the HSARPA website, <http://www.hsarpasbir.com>.
- e. **All proposers are advised to monitor the <http://www.hsarpasbir.com> website** during the solicitation period for questions and answers, and other information relevant to the topic under which they are proposing.

## ***2.0 DEFINITIONS***

The following definitions apply for the purposes of this solicitation:

### ***2.1 Research or Research and Development***

Any activity that is:

- a. **Basic Research.** Scientific study and experimentation to provide fundamental knowledge required for the solution of problems.
- b. **Exploratory Development.** A study, investigation or minor development effort directed toward specific problem areas with a view toward developing and evaluating the feasibility and practicability of proposed solutions.
- c. **Advanced Development.** Proof of design efforts directed toward projects that have moved into the development of hardware for test.

- d. **Engineering Development.** Full-scale engineering development projects for Department of Homeland Security (DHS) or first responder use but which have not yet received approval for production.

## **2.2 *Small Business***

A small business concern is one that at the time of award of a Phase I or Phase II contract is:

- a. Organized for profit, with a place of business located in the United States, which operates primarily within the United States or which makes a significant contribution to the United States economy through payment of taxes or use of American products, materials, or labor;
- b. In the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative, except that where the form is a joint venture, there can be no more than 49 percent participation by foreign business entities in the joint venture;
- c. At least 51 percent owned and controlled by one or more individuals who are citizens of, or permanent resident aliens in, the United States, except in the case of a joint venture, where each entity to the venture must be 51 percent owned and controlled by one or more individuals who are citizens of, or permanent resident aliens in, the United States; and
- d. Not more than 500 employees, including its affiliates.

## **2.3 *Socially and Economically Disadvantaged Small Business***

A small business that is at the time of award of a Phase I or Phase II contract, at least 51 percent owned by one or more socially and economically disadvantaged individuals, as defined in 13 CFR Part 124 - 8(A) Business Development/Small Disadvantaged Business Status Determinations, §124.103 ("Who is socially disadvantaged?") and §124.104 ("Who is economically disadvantaged?").

## **2.4 *Women-Owned Small Business***

A women-owned small business is one that is at least 51 percent owned by one or more women, or in the case of a publicly owned business, at least 51 percent of the stock of which is owned by women, and who also control and operate it. "Control" in this context means exercising the power to make policy decisions. "Operate" in this context means being actively involved in the day-to-day management of the business.

## **2.5 *Funding Agreement***

Any contract or grant entered into between any Federal Agency and any small business concern for the performance of experimental, developmental, or research work funded in whole or in part by the Federal Government.

## **2.6 *Subcontract***

A subcontract is any agreement, other than one involving an employer-employee relationship, entered into by an awardee of a funding agreement calling for supplies or services for the performance of the original funding agreement. This includes consultants. See Section 3.5.b(9).

## **2.7 Commercialization**

The process of developing marketable products or services and delivering products or services for sale (whether by the originating party or by others) to Government or commercial markets.

## **2.8 Essentially Equivalent Work**

This occurs when (1) substantially the same research is proposed for funding in more than one contract proposal or grant application submitted to the same Federal agency; (2) substantially the same research is submitted to two or more different Federal agencies for review and funding consideration; or (3) a specific research objective and the research design for accomplishing an objective are the same or closely related in two or more proposals or awards, regardless of the funding source.

## **2.9 Historically Underutilized Business Zone (HUBZone) Small Business Concern**

HUBZone small business concern means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration. See [www.sba.gov/hubzone](http://www.sba.gov/hubzone) for more details.

## **2.10 Service-Disabled Veteran**

A veteran with a disability that is service connected as defined in Section 101 (16) of Title 38, United States Code.

## **2.11 Small Business Concern Owned and Controlled by Service-Disabled Veterans**

A small business concern that:

- a. not less than 51 percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and
- b. the management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a veteran with permanent and severe disability, the spouse or permanent caregiver of such a veteran.

## **2.12 Small Business Concern Owned and Controlled by Veterans**

A small business concern that:

- a. not less than 51 percent of which is owned by one or more veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more; and
- b. the management and daily business operations of which are controlled by one or more veterans.

## **2.13 United States**

"United States" means the fifty states, the territories and possessions of the Federal Government, the Commonwealth of Puerto Rico, the Republic of the Marshall Islands, the Federated States of Micronesia, the Republic of Palau, and the District of Columbia.

### **2.14 SBIR Technical Data**

All data generated during the performance of an SBIR award.

### **2.15 SBIR Technical Data Rights**

The rights a small business concern obtains in data generated during the performance of any SBIR Phase I, Phase II, or Phase III award that an awardee delivers to the Government during or upon completion of a federally funded project, and to which the Government receives a license.

## **3.0 PROPOSAL PREPARATION INSTRUCTIONS AND REQUIREMENTS**

### **3.1 Proposal Requirements**

A proposal to any topic under the HSARPA SBIR Program is to provide sufficient information to persuade HSARPA that the proposed work represents an innovative approach to the investigation of an important scientific or engineering problem and is worthy of support under the stated criteria. The quality of the scientific or technical content of the proposal will be the principal basis upon which proposals will be evaluated. The proposed research or research and development must be responsive to the chosen topic, although need not use the exact approach specified in the topic (see Section 4.1) and unique. Any small business contemplating a proposal for work on any specific topic should determine that (a) the technical approach has a reasonable chance of meeting the topic objective, (b) this approach is innovative, not routine, and (c) the firm has the capability to implement the technical approach, i.e., has or can obtain people and equipment suitable to the task.

### **3.2 Proposal Checklist**

Those responding to this solicitation should note the proposal preparation tips listed below:

- a. Read and follow all instructions contained in this solicitation.
- b. Submit your proposal electronically via website (<http://www.hsarpasbir.com>) and prepare your proposal as instructed on the website. A complete proposal consists of the proposal cover sheets, technical proposal and cost proposal.
- c. The proposal cost adheres to the topic criteria specified and the cost on the cover sheets matches the cost on the cost proposal.
- d. The Project Summary on the cover sheet contains NO proprietary information. Mark proprietary information within the technical proposal as instructed in Section 5.4.
- e. The content in the technical proposal, including the option (if applicable), includes the items in Section 3.5(b).
- f. The header on each page of your technical proposal should contain your company name, topic number, and proposal number. (The header may be included in the one-inch margins.)
- g. Limit your proposal to 25 pages.
- i. Use a type size no smaller than a 12-point font on standard 8 1/2 " X 11" paper with one (1) inch margins
- j. The technical proposal shall not be in two-column format.

Note: Public access to the internet is available at most public libraries, local schools or a Small Business Development Center (SBDC) in your area.

### ***3.3 Proprietary Information***

If information is provided that constitutes a trade secret, proprietary commercial or financial information, or personal information or data, it will be treated in confidence to the extent permitted by law, provided it is clearly marked in accordance with Section 5.4. The cost proposal information will be treated as proprietary whether or not it is indicated.

### ***3.4 Limitations on Length of Proposal***

This solicitation is designed to reduce the investment of time and cost to small firms in preparing a formal proposal. Those who wish to respond must submit a direct, concise, and informative research or research and development proposal of no more than 25 pages, including proposal cover sheet and cost proposal. Promotional and non-project related discussion is discouraged. The space allocated to each will depend on the problem chosen and the principal investigator's approach. In the interest of equity, pages in excess of the 25-page limitation (including attachments, appendices, or references) will not be considered for review or award.

### ***3.5 Phase I Proposal Format***

a. **Proposal Cover Sheets.** Prepare the proposal cover sheets (as provided on the electronic submission website <http://www.hsarpasbir.com>), including a brief technical abstract of the proposed R&D project and a discussion of anticipated benefits and potential commercial applications. Once you save the cover sheet, the system will assign a proposal number. You may edit the cover sheet as often as necessary until the solicitation closes. Your cover sheets will count as the first two pages of your proposal no matter how they print out. If your proposal is selected for award, the technical abstract and discussion of anticipated benefits will be publicly released on the Internet; therefore, do not include proprietary information in these sections. **CLASSIFIED PROPOSALS WILL NOT BE ACCEPTED.**

b. **Technical Proposal.** Create a single file that covers the following items in the order given below. Begin your technical proposal on Page 3 (since the cover sheets are pages 1 and 2) and put your firm name, topic number, and proposal number in the header of each page. (The header may be included in the one-inch margins.) The technical proposal file must be in Portable Document Format (PDF) for evaluation purposes. You cannot upload the technical proposal to the HSARPA submission website until you have created a cover sheet and been assigned a proposal number. Perform a virus check before uploading the technical proposal file. If a virus is detected, it may cause rejection of the proposal. The technical proposal should be a single file, including graphics and attachments. **Do not lock or encrypt the file you upload.**

- (1) **Identification and Significance of the Problem or Opportunity.** Define the specific technical problem or opportunity addressed and its importance. (Begin on Page 3 of your proposal.)
- (2) **Phase I Technical Objectives.** Enumerate the specific objectives of the Phase I work, including the questions it will try to answer to determine the feasibility of the proposed approach.

- (3) **Phase I Work Plan.** Provide an explicit, detailed description of the Phase I approach. The plan should indicate what is planned, how and where the work will be carried out, a schedule of major events, and the final product to be delivered. The Phase I effort should attempt to determine the technical feasibility of the proposed concept. The methods planned to achieve each objective or task should be discussed explicitly and in detail. This section should be a substantial portion of the total proposal.
- (4) **Related Work.** Describe significant activities directly related to the proposed effort, including any conducted by the principal investigator, the proposing firm, consultants, or others. Describe how these activities interface with the proposed project and discuss any planned coordination with outside sources. The proposal must persuade reviewers of the proposer's awareness of the state-of-the-art in the specific topic. Describe previous work not directly related to the proposed effort but similar. Provide the following: (a) short description, (b) client for which work was performed (including individual to be contacted and phone number), and (c) date of completion.
- (5) **Relationship with Future Research or Research and Development.** (a) State the anticipated results of the proposed approach if the project is successful. (b) Discuss the significance of the Phase I effort in providing a foundation for Phase II research or research and development effort.
- (6) **Commercialization Strategy.** Describe in approximately two-pages your company's strategy for commercializing this technology in the DHS, other Federal Agencies, and/or private sector markets. Provide specific information on the market need the technology will address and the size of the market. Also, include a schedule showing the quantitative commercialization results from this SBIR project that your company expects to achieve and when (i.e., amount of additional investment, sales revenue, etc.).
- (7) **Key Personnel.** Identify key personnel who will be involved in the Phase I effort including information on directly related education and experience. A concise resume of the principal investigator, including a list of relevant publications (if any), must be included. All resumes will count toward the 25-page limitation. Identify any foreign nationals you expect to be involved on this project, their country of origin and level of involvement.
- (8) **Facilities/Equipment.** Describe available instrumentation and physical facilities necessary to carry out the Phase I effort. Items of equipment to be purchased (as detailed in the cost proposal) shall be justified under this section. Also, state whether or not the facilities where the proposed work will be performed meet environmental laws and regulations of federal, state (name), and local governments for, but not limited to, the following groupings: airborne emissions, waterborne effluents, external radiation levels, outdoor noise, solid and bulk waste disposal practices, and handling and storage of toxic and hazardous materials.
- (9) **Subcontractors/Consultants.** Involvement of a university or other subcontractors or consultants in the project may be appropriate. (see Section 2.6) If such involvement is intended, it should be described in detail and identified in the cost proposal. A minimum of two-thirds of the research and/or analytical work in Phase I, as measured by direct and indirect costs, must be carried out by the proposing firm, unless otherwise approved in writing by the contracting officer. No portion of a SBIR award may be subcontracted back to any Federal Government Agency or Federally Funded Research and Development Centers (FFRDCs). SBA may issue a case-by-case waiver to this provision after review of

the written justification that includes the following information: (a) an explanation of why the SBIR research project requires the use of the Federal/FFRDC facility or personnel, including data that verifies the absence of non-federal facilities or personnel capable of supporting the research effort; (b) why the Agency will not and cannot fund the use of the Federal/FFRDC facility or personnel for the SBIR project with non-SBIR money; and (c) the concurrence of the small business concern's chief business official to use the Federal/FFRDC facility or personnel. Award is contingent on the sponsoring agency obtaining a waiver.

(10) **Prior, Current, or Pending Support of Similar Proposals or Awards.** *Warning --* While it is permissible, with proposal notification, to submit identical proposals or proposals containing a significant amount of essentially equivalent work (see Section 2.8) for consideration under numerous Federal program solicitations, it is unlawful to enter into contracts or grants requiring essentially equivalent effort. If there is any question concerning this, it must be disclosed to the soliciting agency or agencies before award. If a proposal submitted in response to this solicitation is substantially the same as another proposal that has been funded, is now being funded, or is pending with another Federal Agency, the proposer must so indicate on the Proposal Cover Sheet and provide the following information:

- (a) Name and address of the Federal Agency(s) to which a proposal was submitted, will be submitted, or from which an award is expected or has been received.
- (b) Date of proposal submission or date of award.
- (c) Title of proposal.
- (d) Name and title of principal investigator for each proposal submitted or award received.
- (e) Title, number, and date of solicitation(s) under which the proposal was submitted, will be submitted, or under which award is expected or has been received.
- (f) If award was received, state contract number.
- (g) Specify the applicable topics for each SBIR proposal submitted or award received.

Note: If Section 3.5.b(10) does not apply, state in the proposal "No prior, current, or pending support for proposed work."

**c. Cost Proposal.** Complete the cost proposal in the format shown in the [Cost Breakdown Guidance](#), using the online cost proposal form on the electronic submission website. Some items in the [Cost Breakdown Guidance](#) may not apply to the proposed project. If such is the case, there is no need to provide information on each and every item. What matters is that enough information be provided to understand how the proposer plans to use the requested funds if the contract is awarded.

- (1) List all key personnel by name as well as by number of hours dedicated to the project as direct labor.
- (2) Special tooling and test equipment and material cost may be included under Phases I and II. The inclusion of equipment and material will be carefully reviewed relative to need and appropriateness for the work proposed. The purchase of special tooling and test equipment must, in the opinion of the Contracting Officer, be advantageous to the Government and

should be related directly to the specific topic. These may include such items as innovative instrumentation and/or automatic test equipment. Title to property furnished by the Government or acquired with Government funds will be vested with HSARPA unless it is determined that transfer of title to the contractor would be more cost effective than recovery of the equipment.

- (3) Cost for travel funds must be justified and related to the needs of the project. HSARPA requests that you budget, as a minimum, travel to attend a one day meeting with HSARPA Program Management. Reasonable 'indirect' travel costs may include this one day meeting. This meeting may consist of a Phase I Kick-Off meeting or a presentation of your project findings to your Phase I Program Manager. Hence, travel will typically be held at the beginning of your Phase I award or at the conclusion of the Phase I effort; depending on the HSARPA program manager requirement.
- (4) Cost sharing is permitted for proposals under this solicitation; however, cost sharing is not required nor will it be an evaluation factor in the consideration of a Phase I proposal.
- (5) The cost proposal form on the electronic submission website is required to complete the Cost Proposal. If additional cost proposal information is required, it may be placed at the end of your technical proposal.

When a proposal is selected for award, the proposer should be prepared to submit further documentation to the HSARPA contracting officer to substantiate costs (e.g., a brief explanation of cost estimates for equipment, materials, and consultants or subcontractors). For more information about cost proposals and accounting standards, see the DCAA publication called "Information for Contractors" available at <http://www.dcaa.mil>.

### ***3.6 Page Numbering and Bindings***

Number all pages of your proposal consecutively. The cover sheets are pages 1 and 2. The technical proposal begins on page 3.

### ***3.7 Phase II Proposal Invitation***

Phase II Proposals will be invited only from a group of Phase I performers as HSARPA understands that Phase II Proposals involve enormous work and expense. The HSARPA Program Manager for the applicable topic will invite Phase II Proposals based upon site visits, the monthly and/or final reports, and progress made towards the accomplishment of Phase I technical objectives. The number of Phase II Proposal invitations will depend upon the number of Phase I awards made in the topic, the funding available, and the quality of the Phase I research. HSARPA reserves the right to invite all, some, or none of the Phase I awardees in a topic to submit Phase II proposals. The invitation to submit a Phase II Proposal will be made no sooner than two thirds (2/3) into the Phase I period of performance (example: four months into a six month period of performance). HSARPA expects to award approximately 10 Phase II proposals from the 30 phase I FY04.2 awards.

### **3.8 Phase II Proposal Format**

A Phase II proposal can be submitted only by a Phase I awardee and only in response to a request from the HSARPA Program Manager; that is, Phase II is not initiated by this solicitation, but by invitation by the respective Phase I HSARPA Program Manager. Phase II Proposal length is limited to 50 pages, using a type size no smaller than a 12-point font on standard 8 ½ X 11” paper with one (1) inch margins. No two-column format is allowed.

a. **Each Phase II proposal must contain a Proposal Cover Sheet, Technical Proposal, and Cost Proposal.** See section 3.5. In addition, each Phase II proposal must contain a two-page commercialization strategy, addressing the following questions, and a Company Commercialization Report.

b. **Commercialization Strategy**

1. What is the first product that this technology will go into?
2. Who will be your customers, and what is your estimate of the market size?
3. How much money will you need to bring the technology to market, and how will you raise that money?
4. Does your company contain marketing expertise and, if not, how do you intend to bring that expertise into the company?
5. Who are your competitors, and what is your price and/or quality advantage over your competitors?

The commercialization strategy must also include a schedule showing the quantitative results from the Phase II project that your company expects to report in its Company Commercialization Report updates one year after the start of the Phase II, at the completion of Phase II, and after the completion of Phase II (i.e., amount of additional investment, sales revenue, etc. – see section 5.4).

c. **Company Commercialization Report.** If your firm is invited to submit a Phase II proposal, a succinct commercialization plan must be included with each proposal. The Company Commercialization Report is submitted online in accordance with Section 3.5. This report is required for Phase II proposals only and is required even if the firm has not received prior SBIR funding.

Additional instructions regarding Phase II proposal preparation and submission is on the <http://www.hsarpasbir.com> website and will be provided or made available by the HSARPA contracting office to invited Phase II offerors.

### **3.9 False Statements**

Knowingly and willfully making any false, fictitious, or fraudulent statements or representations may be a felony under the False Statement Act (18 U.S.C. §1001), punishable by a fine of up to \$10,000, up to five years in prison, or both.

## **4.0 METHOD OF SELECTION AND EVALUATION CRITERIA**

### **4.1 Introduction**

Phase I proposals will be evaluated on a competitive basis and will be considered to be binding for six (6) months from the date of closing of this solicitation unless the offeror states otherwise. If selection has not been made prior to the proposal's expiration date, offerors will be requested as to whether or not they want to extend their proposal for an additional period of time. Proposals meeting stated solicitation requirements will be evaluated by scientists or engineers knowledgeable in the topic area. Proposals will be evaluated first on their relevance to the chosen topic. A proposal that meets the goals of a solicitation topic but does not use the exact approach specified in the topic will be considered relevant. (Prospective proposers should contact the HSARPA SBIR program as described in Section 1.6 to determine whether submission of such a proposal would be useful.)

Proposals found to be relevant will then be evaluated using the criteria listed in Section 4.2. Final decisions will be made based upon these criteria and consideration of other factors including possible duplication of other work and program balance. In the evaluation and handling of proposals, every effort will be made to protect the confidentiality of the proposal and any evaluations. There is no commitment by HSARPA to make any awards on any topic, to make a specific number of awards or to be responsible for any monies expended by the proposer before award of a contract.

For proposals that have been selected for contract award, a Government Contracting Officer will draw up an appropriate contract to be signed by both parties before work begins. Any negotiations that may be necessary will be conducted between the offeror and the Government Contracting Officer. It should be noted that only a duly appointed contracting officer has the authority to enter into a contract on behalf of the U.S. Government.

Prior to receiving a contract award, the offeror must be registered in the Central Contractor Registration (CCR) database. For information regarding registration, call 1-888-227-2423 or visit [www.ccr.gov](http://www.ccr.gov).

Phase II Proposals will be subject to a technical review process similar to Phase I. Final decisions will be made based upon the scientific and technical evaluations and other factors, including a commitment for Phase III follow-on funding, the possible duplication with other research or research and development, program balance, budget limitations, and the potential of a successful Phase II effort leading to a product of continuing interest to DHS. HSARPA is not obligated to make any awards under Phase II, and all awards are subject to the availability of funds. HSARPA is not responsible for any monies expended by the proposer before award of a contract.

Upon written request and after final award decisions have been announced, a debriefing will be provided to unsuccessful offerors on their Phase II Proposals (see Section 6.4). Restrictive notices notwithstanding, Phase II Proposals may be handled, for administrative purposes only, by support contractors. All support contractors are bound by appropriate non-disclosure agreements.

### **4.2 Evaluation Criteria - Phase I**

HSARPA plans to select for award those proposals offering the best value to the Government and the nation considering the following factors in decreasing order of importance:

- a. The soundness, technical merit, and innovation of the proposed approach and its incremental progress toward topic or subtopic solution.
- b. The qualifications of the proposed principal/key investigators, supporting staff, and consultants. Qualifications include not only the ability to perform the research and development but also the ability to commercialize the results.
- c. The potential for commercial (Government or private sector) application and the benefits expected to accrue from this commercialization as assessed utilizing the criteria in Section 4.4.

Where technical evaluations are essentially equal in merit, cost to the Government and length of schedule will be considered in determining the successful offeror.

Technical reviewers will base their conclusions only on information contained in the proposal. It cannot be assumed that reviewers are acquainted with the firm or key individuals or any referenced experiments. Relevant supporting data such as journal articles, literature, including Government publications, etc., should be contained or referenced in the proposal and will count towards the 25-page limit.

#### ***4.3 Evaluation Criteria – Phase II***

The Phase II proposal will be reviewed for overall merit based upon the criteria below in decreasing order of importance:

- a. The soundness, technical merit, and innovation of the proposed approach and its incremental progress toward topic or subtopic solution.
- b. The potential for commercial (Government or private sector) application and the benefits expected to accrue from this commercialization as assessed utilizing the criteria in Section 4.3.
- c. The qualifications of the proposed principal/key investigators, supporting staff, and consultants. Qualifications include not only the ability to perform the research and development but also the ability to commercialize the results.

The reasonableness of the proposed costs of the effort to be performed will be examined to determine those proposals that offer the best value to the Government. Where technical evaluations are essentially equal in merit, cost to the Government and length of schedule will be considered in determining the successful offeror.

Phase II Proposal evaluations may include on-site evaluations of the Phase I effort by Government personnel.

Phase II Fast Track proposals. Under the regular Phase II evaluation process, the Fast Track proposals utilize the same three criteria as the Phase II proposals. However, for projects to qualify for the Fast Track (as discussed in Section 4.5), HSARPA will evaluate the Phase II Proposal under a separate, expedited process in accordance with the above criteria, and may select these proposals for Phase II award provided attracted matching cash from an outside investor, presumptively meet criterion (b). Selection of the proposal and award of a Fast Track proposal is not mandated and HSARPA retains the discretion not to select or fund any Fast Track proposal.

#### **4.4 Assessing Commercial Potential of Proposals**

The commercial potential of a proposal will be assessed using the following criteria:

- a. The proposer's commercialization strategy (see Section 3.5.b(6)) and, as discussed in that strategy:
  - (1) any commitments of additional investment in the technology during Phase II from the private sector, prime contractors, non-SBIR programs, or other sources, and
  - (2) any Phase III follow-on funding commitments; and
- b. The proposer's record of commercializing its prior SBIR projects.

A report showing that the proposing firm has no prior Phase II awards will not affect the firm's ability to win an award. Such a firm's proposal will be evaluated for commercial potential based on its commercialization strategy in item a, above.

GOVERNMENT TRANSITION OF THE PROPOSED EFFORT IS VERY IMPORTANT. THE SMALL BUSINESS SHOULD INCLUDE THEIR TRANSITION VISION IN THEIR COMMERCIALIZATION STRATEGY. THE SMALL BUSINESS MUST UNDERSTAND THE END USE OF THEIR EFFORT AND THE END USER.

#### **4.5 SBIR Fast Track**

- a. **In General.** The HSARPA SBIR program has implemented a streamlined Fast Track process for SBIR projects that attract matching cash from an outside investor for the Phase II SBIR effort. The purpose is to focus SBIR funding on those projects that are most likely to be developed into viable new products that DHS and others will buy and that will thereby make a major contribution to Homeland Security and/or economic capabilities.

Outside investors, may include such entities as another company, a venture capital firm, an individual investor, or a non-SBIR, government program; they do not include the owners of the small business, their family members, and/or affiliates of the small business.

- b. **How to Qualify for the SBIR Phase II Fast Track.** To qualify for the SBIR Fast Track, a company must be invited to submit a Phase II proposal. The company is encouraged to discuss the application with the SBIR program manager. The awardee is to follow Phase II proposal instructions and guidance, but provide the Fast Track Phase II documentation and request for matched funding.

1. A Fast Track proposal must be submitted electronically on the HSARPA Electronic Submission website ([www.hsarpasbir.com](http://www.hsarpasbir.com)).

2. The proposing company and its outside investor must:

- (a) State that the outside investor will match funding in the SBIR Phase II Fast Track proposal, in cash, contingent on the company's selection for Phase II award. The matching rates needed to qualify for the Fast Track are as follows:

The outside investors must commit a minimum of \$100,000 up to a maximum of \$500,000. HSARPA will match up to 50% of funds received if the proposal is selected for funding. The SBIR Phase II awards will be made for a maximum of \$750,000 and the Fast Track award will be made for a maximum of \$250,000. The total cumulative government award for the Phase II plus the Fast Track match cannot exceed \$1,000,000.

- (b) Certify that the outside funding proposed in the application qualifies as a "Fast Track investment," and the investor qualifies as an "outside investor," as defined above.

- 3. A Fast Track proposal must provide a letter from the outside investor to the company, containing:

- (a) A commitment to match a minimum of \$100,000 or up to \$500,000 Phase II SBIR Fast Track funding, in cash, contingent on the company's selection for Phase II award.
- (b) A brief statement (less than one page) describing that portion of the effort that the investor will fund. The investor's funds may pay for additional research and development on the company's SBIR project or, alternatively, they may pay for other activities not included in the Phase II statement of work, provided these activities further the development and/or commercialization of the technology (e.g., marketing).
- (c) A brief statement (less than one page) describing (i) the investor's experience in evaluating companies' ability to successfully commercialize technology; and (ii) the investor's assessment of the market for this particular SBIR technology, and of the ability of the company to bring this technology to market.
- (d) A concise statement of work for the Fast Track effort (less than four pages) and detailed cost proposal (less than one page).

The company should prepare its Phase II Fast Track proposal according to Phase II submission instruction, and including the items listed above.

Also, in order to qualify for the Fast Track, the company:

Must certify, within 60 days after being notified that it has been selected for Phase II award, that the entire amount of the matching funds from the outside investor has been transferred to the company. Certification consists of a letter, signed by both the company and its outside investor, stating that "\$\_\_\_\_\_ in cash has been transferred to our

company from our outside investor in accord with the SBIR Fast Track procedures." The letter must be sent to the HSARPA appointed contracting office along with a copy of the company's bank statement showing the funds have been deposited. IMPORTANT: If the HSARPA contracting office does not receive, within the 45 days, this certification showing the transfer of funds, the company will be ineligible to compete for a Phase II award not only under the Fast Track but also under the regular Phase II competition, unless a specific written exception is granted by the Component's SBIR program manager. Before signing the certification letter, the company and investor should read the cautionary note at Section 3.8. If the outside investor is a non-SBIR program, it must provide a line of accounting within the 45 days that can be accessed immediately.

Failure to meet these conditions in their entirety and within the time frames indicated will generally disqualify a company from participation in the SBIR Fast Track. Deviations from these conditions must be approved in writing by the contracting office.

- c. **Additional Reporting Requirement.** In the company's final Phase II progress report; it must include a brief accounting (in the company's own format) of how the investor's funds were expended to support the project.

## **5.0 CONTRACTUAL CONSIDERATIONS**

Note: Eligibility and Limitation Requirements (Section 1.3) Will Be Enforced

### **5.1 Phase I Awards**

- a. **Number of Phase I Awards.** The number of Phase I awards will be consistent with the agency's budget and the number of anticipated Phase II contracts. No Phase I contracts will be awarded until all qualified proposals (received in accordance with Section 6.2) on a specific topic have been evaluated. Proposers will be notified of selection/non-selection within three (3) months of the closing date of this solicitation.
- b. **Type of Funding Agreement.** All winning proposals will be funded under negotiated contracts and may include a reasonable fee or profit consistent with normal profit margins provided to profit-making firms for R/R&D work.
- c. **Average Dollar Value of Awards.** Phase I awards to small businesses will typically cover a one-half person-year effort over a period not to exceed six months (subject to negotiation). Public Law 102-564 allows agencies to award Phase I contracts up to \$100,000 without justification.
- d. **Timing of Phase I Awards.** The anticipated time between the date that this solicitation closes and the award of the Phase I is less than six (6) months.

## 5.2 *Phase II Awards*

- a. **Number of Phase II Awards.** The number of Phase II awards will depend upon the results of the Phase I efforts and the availability of funds. HSARPA anticipates that approximately 30 percent of its Phase I awards will result in Phase II projects.
- b. **Type of Funding Agreements.** Each Phase II proposal selected for an award will be funded under a negotiated contract or other agreement type and may include a reasonable fee or profit consistent with normal profit margins provided to profit-making firms for R/R&D work.
- c. **Average Dollar Value of Awards.** Phase II awards will typically cover two to five person-years of effort over a period generally not to exceed 24 months. PL 102-564 states that the Phase II awards may be up to \$750,000 each without justification.
- d. **Timing of Phase II Awards.** Phase II awards will be made incrementally, as quickly as possible, to maintain the momentum of the Phase I effort. The Phase II Proposal invitation process is an attempt to identify expeditiously those Phase I awardees deserving of Phase II awards. HSARPA reserves the right to evaluate individual Phase II Proposals when received and make Phase II proposal invitations incrementally, to some, all, or none of the Phase I performers.

## 5.3 *Phase I Report*

- a. **Content.** A final report is required for each Phase I project. The report must contain in detail the project objectives, work performed, results obtained, and estimates of technical feasibility. A completed Standard Form (SF) 298, "Report Documentation Page," will be used as the first page of the report. (The Report Documentation Page may be printed from the HSARPA electronic submission website at <http://www.hsarpasbir.com>.) In addition, monthly status and progress reports will be required by HSARPA.
- b. **Preparation.**
  - (1) If desirable, language used by the company in its Phase II proposal to report Phase I progress may also be used in the final report.
  - (2) For each unclassified report, the company submitting the report should fill in block 12a (Distribution/Availability Statement) of the SF 298, "Report Documentation Page" with one of the following statements:
    - (a) Approved for public release; distribution unlimited.
    - (b) Distribution authorized to U.S. Government Agencies only; contains proprietary information. Note: HSARPA, after reviewing the company's entry in block 12a, has final responsibility for assigning a distribution statement.
  - (3) Block 13 (Abstract) of the SF 298, "Report Documentation Page" must include as the first sentence, "Report developed under SBIR contract for topic [insert solicitation topic number]. The abstract must identify the purpose of the work and briefly describe the work carried out, the finding or results and the potential applications of the effort. Since the

abstract will be published by HSARPA, it must not contain any proprietary or classified data.

(4) Block 14 (Subject Terms) of the SF 298 must include the term "SBIR Report."

**c. Submission.** The company shall submit an electronic copy of the final report on each Phase I project in accordance with the Phase I contract and negotiated schedule. The submission schedule will normally be within 15 days after completion of the Phase I technical effort. Detailed submission instructions will be provided at contract award and on the HSARPA Website: [www.hsarpasbir.com](http://www.hsarpasbir.com).

#### ***5.4 Commercialization Updates in Phase II***

If, after completion of Phase I, the contractor is awarded a Phase II contract, the contractor shall be required to periodically update the following commercialization results of the Phase II project through the Website at [www.hsarpasbir.com](http://www.hsarpasbir.com)

- a. Sales revenue from new products and non-R&D services resulting from the Phase II technology;
- b. Additional investment from sources other than the federal SBIR/STTR program in activities that further the development and/or commercialization of the Phase II technology;
- c. Whether the Phase II technology has been used in a fielded HSARPA system or acquisition program and, if so, which system or program;
- d. The number of patents resulting from the contractor's participation in the SBIR/STTR program;
- e. Growth in number of firm employees; and
- f. Whether the firm has completed an initial public offering of stock (IPO) resulting, in part, from the Phase II project.

These updates on the project will be required one year after the start of Phase II, at the completion of Phase II, and subsequently when the contractor submits a new SBIR proposal to HSARPA. Firms that do not submit a new proposal to HSARPA will be asked to provide updates on an annual basis for five years after the completion of Phase II.

#### ***5.5 Payment Schedule***

The specific payment schedule (including payment amounts) for each contract will be incorporated into the contract upon completion of negotiations between the HSARPA and the successful Phase I or Phase II offeror. Successful offerors may be paid periodically as work progresses in accordance with the negotiated price and payment schedule. Phase I contracts are primarily fixed price contracts, under which monthly payments may be made. The contract may include a separate provision for payment of a fee or profit. Final payment will follow completion of contract performance and acceptance of all work required under the contract. In all cases, DHS must make payment to recipients under SBIR funding agreements in full, subject to audit, on or before the last day of the 12-month period beginning on the date of the completion of award. Other types of financial assistance may be available under the contract.

Phase II Funding awards may be Cost-Plus contracts or other types of funding agreements. Progress payments are allowed in accordance with the negotiated price and payment schedule. Provisions for payment of a fee or profit are also allowable. Final payment will follow completion of contract performance and acceptance of all work required under the agreement. In all cases, DHS must make payments to recipients under SBIR funding agreements in full, subject to audit, on or before the last day of the 12-month period beginning on the date of the completion of award.

### ***5.6 Markings of Proprietary Proposal Information***

The proposal submitted in response to this solicitation may contain technical and other data that the proposer does not want disclosed to the public or used by the Government for any purpose other than proposal evaluation. Information contained in unsuccessful proposals will remain the property of the proposer except for the proposal cover sheet. The Government may, however, retain copies of all proposals. Public release of information in any proposal submitted will be subject to existing statutory and regulatory requirements.

If proprietary information is provided by a proposer in a proposal that constitutes a trade secret, proprietary commercial or financial information, or personal information or data it will be treated in confidence, to the extent permitted by law, provided this information is clearly marked by the proposer with the term "PROPRIETARY" (not "Company Confidential") and provided that the following legend that appears on the Proposal Cover Sheet of the proposal is completed:

"For any purpose other than to evaluate the proposal, this data except proposal cover sheet shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed in whole or in part, provided that if a contract is awarded to the proposer as a result of or in connection with the submission of this data, the Government shall have the right to duplicate, use or disclose the data to the extent provided in the funding agreement. This restriction does not limit the Government's right to use information contained in the data if it is obtained from another source without restriction. The data subject to this restriction is contained on the pages of the proposal listed on the line below."

Any other legend may be unacceptable to the Government and may constitute grounds for removing the proposal from further consideration and without assuming any liability for inadvertent disclosure. The Government will limit dissemination of properly marked information to within official channels. In addition, each page of the proposal containing proprietary data which the proposer wishes to restrict must be marked with the following legend:

"Use or disclosure of the proposal data on lines specifically identified by asterisk (\*) are subject to the restriction on the Cover Sheet of this proposal."

If all of the information on a particular page is proprietary, the proposer should so note by including the word "PROPRIETARY" (not "Company Confidential") in both the header and footer on that page. The Government assumes no liability for disclosure or use of unmarked data and may use or disclose such data for any purpose.

In the event properly marked data contained in a proposal in response to this solicitation is requested pursuant to the Freedom of Information Act, 5 USC §552, the proposer will be advised of such request and prior to such release of information will be requested to expeditiously submit to HSARPA a detailed listing of all information in the proposal which the proposer believes to be exempt from disclosure under the Act. Such action and cooperation on the part of the proposer will

ensure that any information released by HSARPA pursuant to the Act is properly determined. *Classified Phase I proposals will not be accepted under the HSARPA SBIR program.*

### **5.7 Copyrights**

With prior written permission of the contracting officer, the awardee may copyright (consistent with appropriate national security considerations, if any) material developed with HSARPA support. HSARPA receives a royalty-free license for the Federal Government and requires that each publication contain an appropriate acknowledgment and disclaimer statement.

### **5.8 Patents**

Small business firms normally may retain the principal worldwide patent rights to any invention developed with Government support. The Government receives a royalty-free license for its use, reserves the right to require the patent holder to license others in certain limited circumstances, and requires that anyone exclusively licensed to sell the invention in the United States must normally manufacture it domestically. To the extent authorized by 35 USC §205, the Government will not make public any information disclosing a Government-supported invention for a period of five years to allow the awardee to pursue a patent.

### **5.9 Technical Data Rights**

Rights in technical data, including software, developed under the terms of any contract resulting from proposals submitted in response to this solicitation generally remain with the contractor, except that the Government obtains a royalty-free license to use such technical data only for Government purposes during the period commencing with contract award and ending four years after completion of the project under which the data were generated. Upon expiration of the four-year restrictive license, the Government has unlimited rights in the SBIR data. During the license period, the Government may not release or disclose SBIR data to any person other than its support services contractors except (1) For evaluation purposes; (2) As expressly permitted by the contractor; or (3) A use, release, or disclosure that is necessary for emergency repair or overhaul of items operated by the Government. See FAR clause 52.227-20, "Rights in Data -- SBIR Program."

### **5.10 Contractor Commitments**

Upon award of a contract, the contractor will be required to make certain legal commitments through acceptance of Government contract clauses in the Phase I contract. The outline that follows is illustrative of the types of provisions required by the Federal Acquisition Regulations that will be included in the Phase I contract. This is not a complete list of provisions to be included in Phase I contracts, nor does it contain specific wording of these clauses. Copies of complete general provisions will be made available prior to award.

- a. **Standards of Work.** Work performed under the contract must conform to high professional standards.
- b. **Inspection.** Work performed under the contract is subject to Government inspection and evaluation at all reasonable times.

- c. **Examination of Records.** The Comptroller General (or a fully authorized representative) shall have the right to examine any directly pertinent records of the contractor involving transactions related to this contract.
- d. **Default.** The Government may terminate the contract if the contractor fails to perform the work contracted.
- e. **Termination for Convenience.** The contract may be terminated at any time by the Government if it deems termination to be in its best interest, in which case the contractor will be compensated for work performed and for reasonable termination costs.
- f. **Disputes.** Any dispute concerning the contract that cannot be resolved by agreement shall be decided by the contracting officer with right of appeal.
- g. **Contract Work Hours.** The contractor may not require an employee to work more than eight hours a day or forty hours a week unless the employee is compensated accordingly (that is, receives overtime pay).
- h. **Equal Opportunity.** The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin.
- i. **Affirmative Action for Veterans.** The contractor will not discriminate against any employee or applicant for employment because he or she is a disabled veteran or veteran of the Vietnam era.
- j. **Affirmative Action for Handicapped.** The contractor will not discriminate against any employee or applicant for employment because he or she is physically or mentally handicapped.
- k. **Officials Not to Benefit.** No member of, or delegate to Congress, shall benefit from the contract.
- l. **Covenant Against Contingent Fees.** No person or agency has been employed to solicit or secure the contract upon an understanding for compensation except bona fide employees or commercial agencies maintained by the contractor for the purpose of securing business.
- m. **Gratuities.** The contract may be terminated by the Government if any gratuities have been offered to any representative of the Government to secure the contract.
- n. **Patent Infringement.** The contractor shall report each notice or claim of patent infringement based on the performance of the contract.
- o. **Security Requirements.** The contractor shall safeguard any classified information associated with the contracted work in accordance with applicable regulations.
- p. **American-Made Equipment and Products.** When purchasing equipment or a product under the SBIR funding agreement, purchase only American-made items whenever possible.

### ***5.11 Contractor Registration***

Before HSARPA can award a contract to a successful proposer under this solicitation, the proposer must be registered in the Central Contractor Registration (CCR) database. The CCR allows Federal Government contractors or firms interested in conducting business with HSARPA to provide basic

information on business capabilities and financial information. To register, visit [www.ccr.gov](http://www.ccr.gov) or call 1-888-227-2423.

### ***5.12 Invention Reporting***

SBIR awardees must report inventions to the awarding agency within two (2) months of the inventor's report to the awardee. The reporting of inventions may be accomplished by submitting paper documentation, including fax, or through the Edison Invention Reporting System at [www.i Edison.gov](http://www.i Edison.gov).

### ***5.13 Additional Information***

- a. General.** This Program Solicitation is intended for informational purposes and reflects current planning. If there is any inconsistency between the information contained herein and the terms of any resulting SBIR contract, the terms of the contract are controlling.
- b. Small Business Data.** Before award of an SBIR contract, the Government may request the proposer to submit certain organizational, management, personnel, and financial information to confirm responsibility of the proposer.
- c. Proposal Preparation Costs.** The Government is not responsible for any monies expended by the proposer before award of any contract.
- d. Government Obligations.** This Program Solicitation is not an offer by the Government and does not obligate the Government to make any specific number of awards. Also, awards under this program are contingent upon the availability of funds.
- e. Unsolicited Proposals.** Unsolicited proposals will not be accepted under the SBIR Program in either Phase I or Phase II.
- f. Duplication of Work.** If an award is made pursuant to a proposal submitted under this Program Solicitation, the contractor will be required to certify that he or she has not previously been, nor is currently being, paid for essentially equivalent work by an agency of the Federal Government.
- g. Classified Proposals.** Classified proposals for Phase I are not accepted under the HSARPA SBIR program.

## ***6.0 SUBMISSION OF PROPOSALS***

Each proposal must be submitted on the HSARPA electronic submission website at <http://www.hsarpasbir.com> and contain a completed:

- Proposal Cover Sheet,
- Technical Proposal,
- Cost Proposal, and
- Commercialization Plan (Phase II Proposals only).

### ***6.1 Electronic Proposal Submission***

For complete electronic proposal submission on the HSARPA electronic submission website, first prepare the proposal cover sheet (select "Prepare/Edit Phase I Cover Sheet" from the Main Menu).

The website will assign the cover sheet a proposal number, which will be used for tracking throughout the submission process. Prepare the technical proposal in a single PDF file, check it for viruses, and upload it to the submission website, following instructions on the website. The cost proposal may be submitted either using the on-line form or as the last page(s) of your technical proposal file. Technical proposals should be a single file, including all graphics and attachments, should have the company name and proposal number (from the cover sheets) in the header, and should be in Portable Document Format (PDF). Offerors are responsible for performing a virus check on each technical proposal prior to uploading. Every uploaded file will be scanned for viruses. If a virus is detected, the file will be deleted and may cause rejection of the proposal. Once uploaded, the technical proposal file may be viewed or downloaded from the website by clicking on the Check Upload button. Offerors are responsible for verifying that the technical proposal was received and converted properly. Technical proposals may be uploaded as often as necessary, each time overwriting the file previously submitted. Once a file is overwritten, the previous version is NOT retrievable. Offerors electing to modify their proposals in any way must allow enough time to upload a complete updated proposal. Failure to provide a complete modification by the solicitation closing will render the offeror's proposal as "late" regardless of whether the offeror had previously submitted a complete proposal. Signatures are not required on the cover sheets and cost proposal at the time of submission for electronic submission. If the proposal is selected for award, HSARPA will contact you for signatures.

Proposals are accepted from **14 June, 2004 – 14 July, 2004**. Deadline for electronic receipt of proposals is 4:00 pm ET 14 July, 2004. Proposals must be completely submitted to the HSARPA submission website by the specified closing time. Complete submission means that the entire proposal (including the following three (3) parts: cover sheets, technical proposal, and cost proposal) has been properly completed and fully transmitted to the HSARPA submission website. The solicitation deadline is firm. As the close date draws near, heavy traffic on the web server may cause delays. Plan ahead and leave ample time to prepare and submit your proposal. Offerors bear the risk of website inaccessibility due to heavy usage in the final hours before the solicitation closing time. In accordance with FAR 52.215-1, offerors are responsible for submitting proposals, and any modification, or revisions, so as to reach the Government office designated in the solicitation by the time specified in the solicitation. Any proposal, modification, or revision received at the Government office designated in the solicitation after the exact time specified for receipt of offers is "late" and will not be considered unless it is received before award is made, the Contracting Officer determines that accepting the late offer would not unduly delay the acquisition; and

- (1) If it was transmitted through an electronic commerce method authorized by the solicitation, and it was received at the initial point of entry to the Government infrastructure no later than 5:00 p.m. one working day prior to the date specified for receipt of proposals; or
- (2) There is acceptable evidence to establish that it was received at the Government installation designated for receipt of offers and was under the Government's control prior to the time set for receipt of offers; or
- (3) It is the only proposal received.

Acceptable evidence to establish the time of receipt at the Government installation includes documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel. Offerors are responsible for checking their proposal submission through

the HSARPA electronic submission website (click on the Check Proposal icon to the right of the proposal number) to confirm that the proposal package is complete and readable. Proposals may be withdrawn by written notice received at any time prior to award. Proposals may also be withdrawn in person by an offeror or his authorized representative, provided his identity is made known and he signs a receipt for the proposal.

Any modification or revision may not make the proposal longer than 25 pages. Notwithstanding the above, a late modification of an otherwise successful proposal which makes its terms more favorable to the Government will be considered at any time it is received and may be accepted.

Additional guidance regarding Phase II Proposal submission will be provided to selected Phase I awardees during the Phase I period of performance, and will also be found on the <http://hsarpasbir.com> website.

## ***6.2 Notification of Proposal Receipt***

Notification of receipt of proposal will be provided via e-mail.

## ***6.3 Information on Proposal Status***

Evaluation of Phase I proposals and award of contracts will be expedited, but no information on proposal status will be available until the final selection is made. However, contracting officers may contact any and all qualified proposers prior to contract award. Selections will be posted on the HSARPA SBIR website when all selected proposals have been negotiated for award within six months of the solicitation closing date.

Evaluation of Phase II Proposals will begin upon receipt of the individual proposals. HSARPA reserves the right to make Phase II awards incrementally as Phase II proposals are received and evaluated. Selections will be posted on the HSARPA SBIR website as awards are made.

## ***6.4 Debriefing of Unsuccessful Offerors***

An unsuccessful offeror that submits a written request for a debriefing within 10 days of being notified that its proposal was not selected for award will be provided a debriefing. The written request should be sent to the HSARPA SBIR Program office, DHS/S&T/HSARPA, ATTN: Mr. Timothy Sharp, SBIR Program Manager, Washington, DC 20528, or email [faq@hsarpasbir.com](mailto:faq@hsarpasbir.com). An offeror that fails to submit a timely request is not entitled to a debriefing, although untimely debriefing requests may be accommodated at the Government's discretion.

## ***6.5 Correspondence Relating to Proposals***

All correspondence relating to proposals should cite the SBIR solicitation number, proposal number, and specific topic number.

## **7.0 SCIENTIFIC AND TECHNICAL INFORMATION**

Scientific and technical reference information is provided with each individual topic provided in Section 8.0.

## **8.0 TECHNICAL TOPICS**

This section contains detailed topic descriptions outlining the technical areas in which HSARPA requests proposals. Topics are listed and numbered separately.

HSARPA invests in programs offering the potential for revolutionary changes in technologies that promote homeland security or accelerates the prototyping and deployment of technologies that reduce homeland vulnerabilities. Thus, the HSARPA SBIR goal is to pursue as many innovative research ideas and concepts that promote homeland security with the potential for commercialization.

HSARPA has identified technical topics to which small businesses may respond in the first fiscal year (FY 2004) solicitation (FY04.2). Please note that these topics are UNCLASSIFIED and only UNCLASSIFIED Phase I proposals will be entertained. Although the topics are unclassified, the subject matter may be considered to be a “critical technology.” If you plan to employ Non-U.S. citizens in the performance of an HSARPA SBIR contract, please identify these individuals in your proposal as specified in Section 3.5.b(7) of the program solicitation. A list of the topics currently eligible for proposal submission is included in this section followed by full topic descriptions. These are the only topics for which proposals will be accepted at this time.

ELECTRONIC SUBMISSION of Cover Sheet, Technical and Cost proposal **IS REQUIRED**. Only proposals submitted through the on-line submission website at <http://www.hsarpasbir.com> will be accepted or considered for award. Proposals must be prepared and submitted in accordance with the instructions below.

#### HELPFUL HINTS:

Consider the file size of the technical proposal to allow sufficient time for uploading.

- Perform a virus check.
- Signature is no longer required at the time of submission.
- If you encounter problems during electronic submission call toll free at 1-800-754-3043.
- Facsimile (fax) or e-mail proposals submissions will not be accepted.

Phase I proposals shall not exceed \$100,000, and should be a **six-month or less effort**.

HSARPA Phase II proposals must be invited by the respective Phase I HSARPA Program Manager. Phase II invitations will be based upon progress toward meeting the Phase I technical objectives, on the technical results reflected in the monthly and/or final reports, and by site visits conducted by HSARPA.

Prior to receiving a contract award, the small business **MUST** be registered in the Centralized Contractor Registration (CCR) Program. You may obtain registration information by calling 1-888-352-9333 and pressing 3 or Internet at [www.ccr.gov](http://www.ccr.gov).

SBIR proposals will be processed and distributed to the appropriate technical office within HSARPA for evaluation and action. Evaluation will be done primarily by Government personnel. A support contractor who has signed appropriate non-disclosure agreements (NDAs) and non-conflict of interest forms will handle the proposals for administrative purposes only. HSARPA selects proposals for funding based on technical merit and the evaluation criteria contained in this solicitation document.

As funding is limited, HSARPA reserves the right to select and fund only those proposals considered to be superior in overall technical quality and highly relevant to the DHS mission. As a result, HSARPA may fund more than one proposal in a specific topic area if the technical quality of the proposal(s) is deemed superior, or it may not fund any proposals in a topic area. Each proposal submitted to HSARPA must have a topic number and must be responsive to only one topic.

- Cost proposals will be considered to be binding for 180 days from closing date of solicitation.
- Successful offerors will be expected to begin work no later than 30 days after contract award.
- For planning purposes, the contract award process is normally completed within 45 to 60 days from issuance of the selection notification letter to Phase I offerors.

**8.1 HSARPA TOPICS -- HSARPA Small Business Fiscal Year 04 Publication 2**

H-SB04.2-001	<b>CROSS-DOMAIN ATTACK CORRELATION TECHNOLOGIES</b>
H-SB04.2-002	<b>REAL-TIME MALICIOUS CODE IDENTIFICATION</b>
H-SB04.2-003	<b>ALTERNATIVES TO CL<sub>2</sub> IN MUNICIPAL WATER PURIFICATION</b>
H-SB04.2-004	<b>WIDE-AREA TOXIC INDUSTRIAL CHEMICALS (TICs) NEUTRALIZATION</b>
H-SB04.2-005	<b>INNOVATIVE TECHNIQUES FOR CONCEALED WEAPONS OR EXPLOSIVE DETECTION AT A DISTANCE</b>
H-SB04.2-006	<b>IMPROVED AND INNOVATIVE COOLING GARMENTS FOR EMERGENCY RESPONDERS</b>

CLOSED

**SBIR TOPIC NUMBER: H-SB04.2-001**

**TITLE: CROSS-DOMAIN ATTACK CORRELATION TECHNOLOGIES**

**TECHNOLOGY AREAS:** Cyber Security

**OBJECTIVE:** Develop a system to efficiently correlate information from multiple intrusion detection systems (IDSes) about “stealthy” sources and targets of attacks in a distributed fashion across multiple environments.

**DESCRIPTION:** Classical intrusion detection systems (IDS) are either host-based or network-based, but in either case are typically constrained within one administrative domain (e.g., the network inside and/or immediately outside a company firewall). Such IDS’s have two major problems: (1) they produce very verbose results, often generating alarms for perfectly legitimate network traffic (e.g., false positives), and worse, (2) they often fail to pick up the stealthy scanners that may distribute scans over very long time periods, such as days, weeks, or even months. Working with such a “local picture”, while useful for the “individual” hacker, does little to counter the increasingly pervasive global scans, either by worms or by malicious entities who are working on a far more global scale to harness machines and networks for distributed denial-of-service attacks, “bot” networks, and other types of malicious applications and activities. Since the IDS data is sufficiently noisy, little can be done to detect these larger-scale malicious activities without tremendous manual effort. This requires a larger-scale, distributed system for correlation attack information across multiple administrative domains.

With a distributed approach, there are several challenges and risks, including potentially sensitive information escaping the boundary of the administrative domain, information and context loss because of the need to share across domains, and coordinating distributed entities requires some infrastructure to support a variety of network conditions. By expanding the approach to include multiple domains, it is possible to identify attackers who may harness distributed networks to avoid single-source thresholds in IDS systems. Also, this information can be combined with other well known network information to discover the geographic location and network distribution of these attack sources, which can lead to accountability and enforcement. Because this topic is addressing different administrative domains, all solutions must incorporate technologies for ensuring the security, i.e., privacy and confidentiality, of shared, sensitive information, including but not limited to network information.

**PHASE I:** Demonstrate the efficacy, utility, and advantage of using cross-domain attack correlation for Homeland Security applications. Phase I must demonstrate the ability to do simple attack event correlation and sharing of information across a minimum of two administrative domains.

**PHASE II:** Develop a potentially commercially viable laboratory prototype of the cross-domain attack correlation system. Phase II prototypes must demonstrate that the attack correlators exhibit performance and cost advantages over the best available commercial technology for the same class of attack traffic and can, in fact, correlate traffic from multiple administrative domains.

**PHASE III - COMMERCIAL APPLICATIONS:** New technology successfully developed in this program with transition to commercial internet and network security products for federal, state, and local

Homeland Security applications. In addition, this technology has commercial potential for similar DoD applications.

REFERENCES:

V. H. Berk, and R. S. Gray and G. Bakos, Using Sensor Networks and Data Fusion for Early Detection of Active Worms, Proceedings of the SPIE Aerosense conference, Orlando Florida, April 2003

C. Krugel, T. Toth and C. Kerer. Decentralized event correlation for intrusion detection. ICISC, December 2001.

D. Moore, C. Shannon, G. Voelker and S. Savage, Internet Quarantine: Requirements for Containing Self-Propagating Code, Proc. Infocom 2003.

KEYWORDS: Intrusion Detection, Attack Correlation, Malicious Code Defense

CLOSED

**SBIR TOPIC NUMBER: H-SB04.2-002**

**TITLE: REAL-TIME MALICIOUS CODE IDENTIFICATION**

**TECHNOLOGY AREAS:** Cyber Security

**OBJECTIVE:** Develop technologies to detect anomalous network payloads destined for any service or port in a target machine in order to prevent the spread of destructive code through networks and applications. These technologies should focus on detecting “zero day attacks”, the first appearance of malicious code for which no known defense has been constructed.

**DESCRIPTION:** Worms, viruses and other malicious network injection tools focus on transporting executable code to a target system within a payload designed to exploit a weakness in the target machine. For example, the SQL Slammer attack leveraged a buffer exploit to deliver executable code that would propagate from the SQL Server. Payload anomaly detection has many uses, including, but not limited to, the detection of worms, viruses, malicious executables in the case of hacker attacks against computer systems, faults in application execution for large scale distributed applications, misuse of computer systems, and so forth. Payload anomaly detection is especially difficult for a number of reasons. Network speeds (and the transit of network packets) are very fast, and typically there is very little time and resource available to inspect packet payload contents to ascertain whether the payload is legitimate or not. Further, the detection of illegitimate packet payloads has previously been implemented by “signature based” detection systems that scan the payload for a matching signature.

Many existing technologies focus on identifying the exploits, however, these technologies do not focus on the protocol payloads. The research needed is to focus on identifying payloads that do not conform to the protocols that contain them. Binary data pattern matching and other methods could restrict the delivery of malicious payloads when they are transported by protocols that shouldn't be transporting the malicious payload. For example, providing restrictive mechanisms to deny the delivery of Visual Basic, a known malicious code carrier, to certain ports on the target machine would be an example demonstration. Solutions may be most easily implemented as an extension to existing firewall technologies or demonstrated as a separate appliance.

**PHASE I:** Demonstrate the efficacy, utility, and advantage of using real-time malicious code detection for Homeland Security applications. Phase I examples must demonstrate a prototype (including algorithms) which can detect and filter known attacks directed at a known system service and/or port.

**PHASE II:** Develop a potentially commercially viable laboratory prototype of the malicious code detector. Phase II prototypes must demonstrate that the real-time malicious code detectors exhibit detection performance and cost advantages over the best available commercial anomaly detectors for the same class of attack traffic.

**PHASE III COMMERCIAL APPLICATIONS:** New technology successfully developed in this program with transition to commercial internet and network security products for federal, state, and local Homeland Security applications. In addition, this technology has commercial potential for similar DOD applications.

**REFERENCES:**

S. Soman, C. Krintz, and G. Vigna, Detecting Malicious Java Code Using Virtual Machine Auditing, *Proceedings of the 12th USENIX Security Symposium* 153-167 Washington, DC August 2003

C. Kruegel and G. Vigna, Anomaly Detection of Web-based Attacks, *Proceedings of the 10th ACM Conference on Computer and Communication Security (CCS '03)* Washington, DC October 2003

KEYWORDS: Intrusion Detection, Anomaly Detection, Malicious Code Defense, Viruses

CLOSED

**SBIR TOPIC NUMBER: H-SB04.2-003**

**TITLE: ALTERNATIVES TO CL<sub>2</sub> IN MUNICIPAL WATER PURIFICATION**

**TECHNOLOGY AREAS:** Infrastructure Protection

**OBJECTIVE:** Identify and produce quantities of an alternative to Chlorine for the purpose of disinfecting municipal water supplies in a more cost effective and safer manner than currently exists.

**DESCRIPTION:** Chlorine is the main product of choice among several different municipal water treatment facilities across the nation. Several studies have shown that facilities that use Chlorine are attractive targets to the terrorist communities at large. At present, about 600 facilities could potentially threaten between 100,000 and a million people. About 2,000 facilities could potentially threaten between 10,000 and 100,000 people.<sup>1</sup> A common example of a worst-case scenario associated with a release of a hazardous chemical in RMP-covered processes at a chemical facility involves the catastrophic failure of a chlorine railroad tank car, which could produce a chlorine plume that could travel more than 25 miles before dispersing. If there are public receptor (gathering) locations just outside the chemical facility's property, this type of chemical release could pose an inhalation hazard to members of the public at the closest locations. Another focus of this program is to ascertain and ultimately decrease the amount of disinfection byproducts associated with the use of chlorine.

**PHASE I:** Identify and demonstrate the ability of an alternative to act as a primary disinfectant that inactivates microbial pathogens and prevents re-growth in samples representative of a municipal water treatment facility.

**PHASE II:** Demonstrate the cost-effectiveness and safety of identified alternatives. Alternatives should show that they are able to provide long-lasting residual properties to prevent microbial re-growth throughout the distribution process. An additional key to success in Phase II is to demonstrate the ability to reduce the amount of secondary disinfectants required to ensure adequate residual disinfection throughout the water distribution system.

**PHASE III COMMERCIAL APPLICATIONS:** Technology developed in this project would have numerous commercial applications in filtration, purification, and water storage and processing systems.

**REFERENCES:** <sup>1</sup> U.S Department of Homeland Security, *Characteristics and Common Vulnerabilities Report for Chemical Facilities*, Version 1 (Rev. 1), July 17, 2003.

**KEYWORDS:** chlorine, water purification, filtration

**SBIR TOPIC NUMBER: H-SB04.2-004**

**TITLE: WIDE-AREA TOXIC INDUSTRIAL CHEMICALS (TICs) NEUTRALIZATION**

**TECHNOLOGY AREAS:** Infrastructure Protection

**OBJECTIVE:** Identify and demonstrate safer and more cost-effective alternatives to using typical neutralization techniques (acid/base reactions, hydrolysis, and physical removal for wide area TIC neutralization).

**DESCRIPTION:** Current methods of decontamination have shortcomings regarding their deployment. Cost of storage, requirement of personal protective equipment during its employment, related damage to substrates it is applied to, and clean-up costs are some relevant examples. The primary focus of this effort is to identify, demonstrate and develop a class of alternatives that are both intrinsically safer and more cost-effective than current techniques.

**PHASE I:** The purpose of the Phase I effort is to demonstrate the broad spectrum utility and economic advantage of employing alternative wide area TIC neutralization schemes for homeland security applications. Phase I examples must include at least one each of acids, bases, oxidizing agents, reducing agents and hydrolytically stable TICs.

**PHASE II:** Develop and conduct a commercially viable laboratory lab scale demonstration of at least two wide area TIC neutralization protocols, each of which are more cost effective and safer than current practice.

**PHASE III COMMERCIAL APPLICATIONS:** Industry will adopt effective wide area neutralization protocols in chemical manufacturing transport and utilization locations if deemed to be cost effective and safer vice current practices.

**REFERENCES:** Use web-sites or references easily found through the National Technical Information Service (NTIS) or the Defense Technical Information Center (DTIC).

**KEYWORDS:** decontamination, neutralization, wide-area, TIC

**SBIR TOPIC NUMBER: H-SB04.2-005**

**TITLE: INNOVATIVE TECHNIQUES FOR CONCEALED WEAPONS OR EXPLOSIVE DETECTION AT A DISTANCE**

**TECHNOLOGY AREAS:** Emergency Preparedness and Response

**OBJECTIVE:** Develop innovative techniques to detect concealed explosives or metallic and non-metallic weapons at a safe distance. Both detection of weapons and detection of explosives at a safe distance are desired. Proposals can be submitted for the detection of just non-metallic and metallic weapons, or just for explosives at safe distances.

**DESCRIPTION:** Current fielded concealed weapons and/or explosive detection devices operate at close range, typically less than 0.5 meters in portal, hand-wand or hand-held applications. Concepts are sought for the detection of concealed explosives or metallic and non-metallic weapons carried on persons under clothing in controlled environments, such as building entry (schools, government buildings) or transportation terminals, and uncontrolled environments, such as shopping malls or sporting events, at safe distances, typically in excess of 50 meters. These designs must be appropriate for use both indoors and out, must be benign to people and property in the interrogated area, eventually be low cost to procure and maintain, and have the potential to be portable (preferred) or transportable (mandatory).

**PHASE I:** Define a technically feasible concealed explosives or non-metallic and metallic weapons detector portable which that is portable or transportable. Provide an analysis of the capabilities and limitations of the concept and design, and a proof-of-concept demonstration plan.

**PHASE II:** Design and fabricate a breadboard or brassboard system to detect concealed explosives or non-metallic and metallic weapons, and perform a laboratory and/or field demonstration of that system against representative or surrogate explosives or weapons.

**PHASE III: Commercial Applications:** New technology successfully developed and demonstrated in this program should be transitioned to commercial security products for federal, state, and local Homeland Security applications. In addition, this technology has potential for other commercial detection applications and for DoD applications such as base and perimeter defenses.

References:

1. [Walk-Through Metal Detectors for Use in Concealed Weapon and Contraband Detection: NIJ Standard-0601.02](#), January 2003
2. Hand-Held Metal Detectors for Use in Concealed Weapon and Contraband Detection, NIJ Standard 0602.02, November 2003
3. Guide to the Technologies of Concealed Weapon and Contraband Imaging and Detection NIJ Guide 602-00, February 2001

**KEY WORD:** Explosives, Weapons, Detection, Security

**SBIR TOPIC NUMBER: H-SB04.2-006**

**TITLE: IMPROVED AND INNOVATIVE COOLING GARMENTS FOR EMERGENCY RESPONDERS**

**TECHNOLOGY AREAS:** Personal Protective Equipment (PPE), Materials

**OBJECTIVE:** Identify and design improved and innovative cooling garments for emergency responders.

**DESCRIPTION:** A HAZMAT team will spend, on average, 30 – 60 minutes in a hazardous situation encumbered by chemical/biological PPE, while a SWAT team member may spend many hours in a hostage scenario or other challenging environment. A cooling garment must fit under other gear that an emergency responder wears – body armor, level A protective gear or turnout gear, and work properly without producing pressure points which irritate the user. Integration and use with the many varieties of body armor is a major issue with users. The bulk of the garment must be low, projecting no more than ¼ inch in thickness. For SWAT operations, the cooling system should not emit an audible noise beyond a distance of 15 feet.

The cooling garment should not have to be assembled on site, must be easily donned by users with their operational gear, and easily removed. The garment should be rechargeable in the field using readily available means while being worn by the user, preferably recharged by the wearer. Any battery power should utilize common battery types. Support equipment should be minimal in size, rugged and power compatible with standard response vehicle power. Testing should be easily accomplished to ensure its operational capability. Cleaning should be done using water-based methods.

Research on innovative designs can include new materials, novel cooling systems and methods of integration with existing PPE. Research on improving existing systems is also acceptable. Research can include improving the component-level performance of vapor compression systems, specifically compressor performance and gas-side heat exchanger specific conductance. Also acceptable is research in the limitations of magnetic cooling and the size of the magnets required, their support structure, and the potential EMI problems with this cycle. Research in the development of an evaporative cooling system coupled with a desiccant wheel and a regenerative heat exchanger, specifically the component level design, demonstration of the system and a detailed analysis of the mass of filter material required, would also be appropriate.

**PHASE I:** Identify and specify the design of an improved or innovative cooling garment that meets weight requirements (3-5 lbs), cooling requirements (200 BTU/hr for 65-85 degrees F and 425 BTU/hr for 70-120 degrees F), and power requirements (10 W for 65-85 degrees F and 35 W for 70-120 degrees F). The design must permit the removal of perspiration-generated moisture from the body and not contain toxic materials.

**PHASE II:** Develop a working model and production process for the manufacture of the cooling garment. The design and working model must take into account the surface temperature of the skin/cooling system interface, the flow rate of the active systems, the inlet temperature for active systems, the heat capacity of the heat sink, the metabolic rate of the user and clothing, and environmental factors.

PHASE III COMMERCIAL APPLICATIONS: The technology successfully developed in this project will have multiple commercial applications, including PPE applications, sports and extreme weather applications.

REFERENCES:

“New Suits Chill CBRN Responders”, Fire Chief, May 1, 2003, ([www.firechief.com](http://www.firechief.com))

Probasco, Kathleen M. and Mogle, Robert D., “The 21<sup>st</sup> Century First Responder – the Vision”, PNNL-SA-30163, Pacific Northwest National Laboratory, Richland, Washington.

KEYWORDS: cooling garment, personal protective equipment, materials

CLOSED

## 8.2 HSARPA FY2004.2 Phase I SBIR Checklist

### Page Numbering

- Number all pages of your proposal consecutively
- Total for each proposal is 25 pages inclusive of cover sheets, technical proposal, cost proposal and resumes
- Beyond the 25-page limit do not send appendices, attachments and/or additional references

### Proposal Format:

- Cover Sheet, Technical and Cost proposals MUST be submitted electronically at <http://www.hsarpasbir.com>

### The Technical Proposal addresses:

- Identification and Significance of Problem or Opportunity
- Phase I Technical Objectives
- Phase I Work Plan
- Related Work
- Relationship with Future Research and/or Development
- Commercialization Strategy
- Key Personnel, Resumes
- Facilities/Equipment
- Consultants
- Prior, Current, or Pending Support

### Final checklist:

- The Cover Sheets were prepared on-line.
- The Cost Proposal shows detailed cost breakout and the total cost is also listed on the Cover Sheets