



# Chemical Safety and Hazard Investigation Board

## Office of General Counsel

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### Memorandum

To: Board Members  
From: Christopher Warner *Ch Warner*  
Cc: Leadership Team  
Subject: Board Action Report – Notation Item 791  
Date: October 22, 2010

On August 10, 2010, the Board approved Notation Item 791, thereby approving the award of, execution of, and allocation of funds for a contract with the National Academy of Sciences for the congressionally mandated study of methyl isocyanate. The Board further approved the maximum value of this contract, which will not exceed \$600,000.

### Voting Summary – Notation Item 791

**Disposition: APPROVED**

**Disposition date: August 10, 2010**

	Approve	Disapprove	Calendar	Not Participating	Date
<b>R. Moure-Eraso</b>	X				8/6/2010
<b>J. Bresland</b>	X				8/12/2010
<b>M. Griffon</b>	X				8/13/2010
<b>W. Wark</b>	X				8/10/2010
<b>W. Wright</b>	X				8/9/2010



## Chemical Safety and Hazard Investigation Board

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### Memorandum

To: Board Members  
From: Rafael Moure-Eraso  
Cc: Leadership Team  
Subject: Notation Item 791  
Date: August 6, 2010

A handwritten signature in blue ink, which appears to read "Rafael Moure-Eraso".

Attached for your review and vote is Notation Item 791. This item provides for Board approval of the award of a contract to the National Academy of Sciences (NAS) for the study of methyl isocyanate required by the CSB's Fiscal Year 2010 appropriations legislation. The item also provides for the allocation of funding for the contract. Board approval is required because the contract exceeds \$50,000.

As is the practice for other major CSB procurements, Board approval for the NAS contract is being sought before the Bureau of the Public Debt contracting officer prepares and circulates the final contract document. In this case, the final contract document will be subject to the approval of the NAS. Additionally, because of the significance of this contract, this notation item includes certain provisos to ensure that the final contract document is consistent with the substantive scope and dollar amount approved by the Board.

You may direct any questions about the substance of the NAS study to Daniel Horowitz. Questions about the procurement or financial aspects of the study should be directed to Bea Robinson. Please return completed vote sheets to Chris Kirkpatrick as soon as possible, but no later than the close of business on August 13, 2010. Thank you for your attention to this item.



## Chemical Safety and Hazard Investigation Board

Rafael Moure-Eraso, Ph.D., CIH  
Chairperson and CEO

John S. Bresland  
Board Member

Mark Griffon  
Board Member

William B. Wark  
Board Member

William E. Wright  
Board Member

### CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD MEMBER VOTING RECORD

**Notation No.:** 791

**Voting Period:** Urgent Notation Item, August 6 – August 13, 2010, but votes are requested as soon as possible.

**Subject:** Contract for National Academy of Sciences MIC Study

Whereas,

1. The CSB Fiscal Year 2010 appropriations legislation, Public Law No. 111-88, requires, and provides \$600,000 in funding for, a study by the National Academy of Sciences (NAS) to examine the use and storage of methyl isocyanate (MIC) including the feasibility of implementing alternative chemicals or processes and an examination of the cost of alternatives at the Bayer CropScience facility in Institute, WV;
2. The Board, by Notation Item 744 (Jan. 30, 2010), approved the execution of, and allocation of \$600,000 for, a contract with the NAS for the congressionally mandated study of MIC;
3. The Board's approval in Notation Item 744 indicated that the contract with the NAS was to be executed by March 31, 2010, which did not ultimately occur because of unanticipated delays;
4. The CSB has now prepared a final Performance Work Statement (Attachment A to this item), and the NAS has submitted a final proposal (Attachment B to this item), for the MIC study contract;
5. The CSB Performance Work Statement and the NAS proposal will be incorporated into a final contract document that will be prepared by the Bureau of the Public Debt and subject to the final approval of the NAS;
6. Board Order 027 requires that the Board approve the allocation of funds for contracts, interagency transfers, or other expenditures which exceed \$50,000; and
7. Board Order 028 requires that the Board approve contracts, interagency transfers, or other expenditures exceeding \$50,000.

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Notation No.: 791  
Subject: Contract for National Academy of Sciences MIC Study

[continued from preceding page]

Therefore, pursuant to its authority, the Board hereby votes to approve, notwithstanding the prior deadline set by Notation Item 744, the award of, and allocation of \$600,000 for, a contract with the National Academy of Sciences for the congressionally mandated study of methyl isocyanate, provided that:

- a. No new tasks are added to, or current tasks deleted from, the CSB Performance Work Statement and NAS proposal attached to this item when they are incorporated into the final contract document;
- b. The final contract document has a not-to-exceed amount of \$600,000; and
- c. The complete final contract document is reviewed by the CSB Contracting Officer's Technical Representative, the CSB Director of Financial Operations and the CSB Office of General Counsel prior to award.

\_\_\_\_\_ I **APPROVE** this notation item **AS PRESENTED**.

\_\_\_\_\_ I **CALENDAR** this notation item for discussion at a Board meeting.  
\_\_\_\_\_ *Some of my concerns are discussed below or on the attached memorandum.*

\_\_\_\_\_ I **DISAPPROVE** this notation item.  
\_\_\_\_\_ *A dissent is attached.*  
\_\_\_\_\_ *I will not file a dissent.*

\_\_\_\_\_ I am **NOT PARTICIPATING**.

Note: An urgent notation item is either adopted or disapproved when the affirmative or negative votes of a majority of the participating members are received by the Office of General Counsel.

Date: \_\_\_\_\_

Member: \_\_\_\_\_

NOTATION ITEM 791

ATTACHMENT A

## PERFORMANCE WORK STATEMENT

### STUDY ON “INHERENTLY SAFER CHEMICAL PROCESSES: THE USE OF METHYL ISOCYANATE AT BAYER CROP SCIENCE”

#### BACKGROUND:

The Chemical Safety and Hazard Investigation Board (CSB) is an independent federal agency with the mission to investigate serious chemical accidents and to recommend measures to prevent future accidents. The CSB is a scientific investigation organization; it is not an enforcement or regulatory body. Established by the Clean Air Act Amendments of 1990, the CSB is responsible for determining the probable causes of incidents, issuing safety recommendations, studying chemical safety issues, and evaluating the effectiveness of other government agencies involved with industrial chemical safety. Section 112 (r) (6) (G) of the Clean Air Act prohibits the use of any conclusions, findings, or recommendations of the CSB relating to any chemical incident from being admitted as evidence or used in any lawsuit arising out of any matter mentioned in an investigation report. Congress modeled the CSB after the National Transportation Safety Board (NTSB), which investigates aircraft and other transportation accidents for the purpose of improving safety. Like the NTSB, the CSB makes public its actions and decisions through investigation reports, safety studies, safety recommendations, special technical publications, and statistical reviews.

#### STATEMENT OF NEED:

Public Law 111-88 (the Department of the Interior, Environment, and Related Agencies Appropriations Act, 2010) directs the Chemical Safety and Hazard Investigation Board (CSB) to conduct “a study by the National Academy of Sciences to examine the use and storage of methyl isocyanate including the feasibility of implementing alternative chemicals or processes and an examination of the cost of alternatives at the Bayer CropScience facility in Institute, West Virginia.”<sup>1</sup>

The study is needed because of concerns about the potential for an airborne release of the chemical, which is highly toxic by inhalation and could adversely impact the health and safety of workers and the public in West Virginia’s Kanawha Valley.<sup>2</sup> Depending upon the progress of the study, the availability of funding, and other factors, the CSB may contract for a second study to examine inherently safer technology (IST) alternatives to other high-volume toxic chemicals used in industry.

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<sup>1</sup> Congress appropriated \$600,000 for conducting the study.

<sup>2</sup> On December 3, 1984, the uncontrolled release of MIC from an underground storage tank at a Union Carbide pesticide manufacturing facility in Bhopal, India, killed thousands of residents and disabled or injured thousands of others.

For a number of years, the Bayer facility in Institute<sup>3</sup> has stored approximately 200,000 pounds of methyl isocyanate (MIC), which has been used as an intermediate to produce carbamate pesticides, including carbofuran, carbaryl, aldicarb, methomyl, and thiodicarb (Larvin). It is the only remaining site in the U.S. which manufactures and stores large quantities of MIC. In August 2009, one year after a serious explosion and fire near an aboveground MIC storage tank, Bayer announced a plan to reduce the maximum inventory of MIC at the Institute site by 80% and to eliminate aboveground storage of the chemical. This plan, which is currently being implemented, would leave approximately 40,000 pounds of MIC stored underground at the site on an ongoing basis. To achieve the inventory reduction, Bayer plans to use its existing carbamate manufacturing technology but to discontinue the production of two MIC-derived carbamate pesticides, methomyl and carbofuran.<sup>4</sup>

## SCOPE:

The National Academy of Sciences (NAS) study will focus on further risk-reduction opportunities, above and beyond the envisioned 80% reduction in MIC inventory. To perform the study, the (NAS) shall convene an expert panel with diverse backgrounds, including:

- Process industries
- Chemistry and chemical engineering (including carbamate pesticide manufacturing)
- Process safety
- Economics
- Community organizations (including the interests of Kanawha Valley residents)
- Environmental organizations (including environmental justice issues)
- Community emergency preparedness and response
- Labor organizations representing the process industries

The expert panel shall produce a detailed written report, conclusions, and recommendations where appropriate on the following subjects:

- 1. Review the current industry practice for the use and storage of MIC in manufacturing processes, including a summary of key lessons and conclusions arising from the 1984 Bhopal accident and resulting changes adopted by industrial users of MIC.**

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<sup>3</sup> The facility was constructed in the 1940's and was developed as a carbamate pesticide manufacturing complex by Union Carbide, which owned the facility from 1947-1986. Bayer CropScience acquired the facility in 2002.

<sup>4</sup> On December 31, 2009, the U.S. Environmental Protection Agency revoked all tolerances for the pesticide, having determined that "dietary, worker, and ecological risks are unacceptable for all uses of carbofuran."

**2. Review current and emerging technologies for producing carbamate pesticides, including carbaryl, aldicarb, and related compounds.**

The review should include:

- 2.1. Synthetic methods and patent literature
- 2.2. Manufacturing approaches used worldwide for these materials
- 2.3. Manufacturing costs for different synthetic routes
- 2.4. Environmental and energy costs and tradeoffs for alternative approaches
- 2.5. Any specific fixed-facility accident or transportation risks associated with alternative approaches
- 2.6. Regulatory outlook for the pesticides including their expected lifetime on the market

**3. Examine the use and storage of MIC at the Bayer Crop Science facility in Institute, West Virginia:**

- 3.1. Identify the most feasible approaches for eliminating or reducing the use of MIC in the Bayer carbamate pesticide manufacturing processes, through, for example, substitution of less hazardous intermediates, intensifying existing manufacturing processes, or consuming MIC simultaneously with its production.
- 3.2. Estimate the projected costs of alternative approaches identified above.
- 3.3. Evaluate the projected benefits of alternative approaches identified above, including any cost savings, reduced compliance costs, liability reductions, reduced emergency preparedness costs, and reduced likelihood or severity of a worst-case MIC release or other release affecting the surrounding community.
- 3.4. Compare this analysis to the inherently safer process assessments conducted by Bayer and previous owners of the Institute site.
- 3.5. Comment, if possible, on whether and how inherently safer process assessments can be utilized during post-accident investigations.

**DELIVERABLES:**

The principal deliverable item is a detailed written report of the expert panel addressing each point in Tasks 1-3 above. The panel may conduct public hearings in West Virginia or elsewhere as appropriate.

**TIMETABLE:**

The report should be produced within 12 months of the initiation of the project. The overall period of performance will be 15 months from the date of contract award.



## **PROGRESS REPORTS:**

Throughout the entire period of performance under this contract, the contractor shall provide the Contracting Officer's Technical Representative (COTR) a brief monthly update and a detailed progress report each quarter. Each report shall include the following information to the extent to which it is applicable for the reporting period:

1. Description of progress made during, and status as of the end of, the reporting period for all ongoing tasks, including significant accomplishments; problem areas, and recommendations.
2. Update on resolution of any problems described in previous reports.
3. Notice of any anticipated deviations from previously established technical plans, cost estimates, delivery dates, and/or performance schedules.
4. Summary of tasks finished, and deliverables completed and delivered, during the reporting period.
5. Summary of costs incurred, by major cost category and in total, for the reporting period and cumulatively (must be provided in writing).

In addition to these scheduled progress reports, the contractor shall promptly report to the COTR any noteworthy accomplishments, significant problems, and/or other matters requiring immediate attention. It is particularly important that the contractor immediately report to the COTR any issues that might adversely affect the performance schedule or delivery date for any tasks and/or deliverables, or result in an increase in the estimated cost of completing the work. The COTR may ask the Contractor for informal progress updates at any time.

## **PAYMENT:**

The contractor shall submit invoices monthly by email to [USCSB@BPD.TREAS.GOV](mailto:USCSB@BPD.TREAS.GOV) for costs incurred during the preceding month. Payment will be approved based upon the COTR's determination that the work/deliverables covered by an invoice have been performed/received and that such work/deliverables satisfy all contractual specifications and requirements set forth in the PWS.

## **CONTRACT TYPE:**

This will be a cost-reimbursement contract in which the contractor shall invoice monthly in arrears for allowable costs in accordance with the Allowable Cost and Payment clause of the Federal Acquisition Regulations at 52.216-7.

## **CONTRACTING OFFICER AUTHORITY**

The Contracting Officer (CO) for this procurement will be an employee of the Bureau of the Public Debt (BPD), the CSB's delegated procurement office. In no event shall any understanding or agreement between the contractor and any government employee other than the appointed CO on any contract modifications, change orders, letter or verbal direction (other than

direction within the scope of the COTR's authority) to the contractor be effective or binding upon the government. All such actions must be formalized by the proper contract modification executed by the appointed CO. The contractor is hereby put on notice in the event a government employee other than the CO directs a change in the work to be performed or increases the scope of work to be performed, it is the contractor's responsibility to make inquiry of the CO before making the deviation.

#### **QUALITY CONTROL PLAN:**

The contractor shall perform work in accordance with the NAS's study process <http://www.nationalacademies.org/studycommitteprocess.pdf>

#### **QUALITY ASSURANCE SURVEILLANCE PLAN:**

The Government will periodically evaluate the contractor's performance in accordance with the Quality Assurance Surveillance Plan (QASP). The purpose of the QASP is to ensure reliable, uninterrupted services are provided in accordance with the PWS.

The Government's QASP includes the following elements:

1. Acceptance and random evaluation of the contractor's adherence to the Quality Control Plan.
2. Periodic inspections of the contractor's work.
3. Communicating customer complaints.
4. Progress meetings with the contractor.

#### **SUPPLEMENTAL TERMS:**

Performance under this contract shall be subject to the following additional terms, which are hereby incorporated into the contract:

1. Protection of Proprietary and Confidential Information

The National Academy of Sciences (NAS) shall adhere to its organizational procedures for the protection, limitation of access, and non-disclosure of proprietary or otherwise confidential information, as described generally in the "Access to Confidential Information" section of the Policy on Committee Composition and Balance and Conflicts of Interest, dated May 12, 2003. The Policy is published on the internet at: [http://www.nationalacademies.org/coi/bi-coi\\_form-0.pdf](http://www.nationalacademies.org/coi/bi-coi_form-0.pdf).

2. Organizational Conflicts of Interest

In conducting the study funded by the CSB under this contract, the NAS shall adhere to its Policy on Committee Composition and Balance and Conflicts of Interest, dated May 12, 2003.

3. Proprietary Rights

The proprietary rights of the parties will be governed by FAR 52.227-14, Rights In Data-General, Alternate IV (Dec. 2007).

4. Federal Advisory Committee Act

The NAS shall perform work under this contract in compliance with the provisions of 5 U.S.C.A. App. 2, § 15.

5. Contractor Testimony

In the event that the NAS receives a request or demand for the testimony of NAS personnel regarding nonpublic incident investigation information supplied by the CSB, the NAS will notify the General Counsel of the CSB.

NOTATION ITEM 791

ATTACHMENT B



# THE NATIONAL ACADEMIES

*Advisers to the Nation on Science, Engineering, and Medicine*

## Division on Earth and Life Studies

500 Fifth Street, NW  
Washington, DC 20001  
Phone: 202 334-3600  
Fax: 202 334-3362 [www.dels.nas.edu](http://www.dels.nas.edu)  
[wmuir@nas.edu](mailto:wmuir@nas.edu)

August 2, 2010

*Proposal #10-DELS-178-01, 2<sup>nd</sup> Revision*

William Dotson  
Contracting Officer  
Department of the Treasury  
Bureau of the Public Debt  
Administrative Resource Center  
200 Third Street, PSB2  
Parkersburg, WV 26106-5312


Dear Mr. Dotson,

We are pleased to submit this revised proposal requesting support from the Chemical Safety Board for the study entitled, *Inherently Safer Chemical Processes: The Use of Methyl Isocyanate (MIC) at Bayer CropScience*. The revised cost of the project is \$598,777 for the period September 1, 2010, through November 30, 2011.

The responsible NRC staff officer is Dr. Dorothy Zolandz and she can be reached on 202-334-3083. Business negotiations are the responsibility of Douglas E. Denning, Contract Manager, Office of Contracts and Grants and he can be reached at 202-334-1422.

We appreciate your review of our revised proposal.

Sincerely,

  
for Warren R. Muir, Ph.D.  
Executive Director

# THE NATIONAL ACADEMIES

*Advisers to the Nation on Science, Engineering, and Medicine*

DIVISION ON EARTH AND LIFE STUDIES

BOARD ON CHEMICAL SCIENCES AND TECHNOLOGY

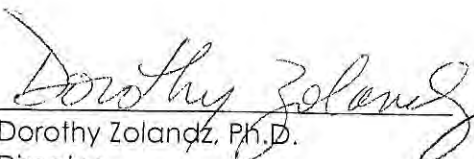
Proposal No. 10-DELS-178-01 (2<sup>nd</sup> Revision)

*Inherently Safer Chemical Processes:  
The Use of Methyl Isocyanate (MIC) at Bayer Crop Science*

AUGUST 2010



David P. Westbrook  
Director  
Office of Contracts and Grants  
National Academy of Sciences  
Telephone: (202) 334-2254  
E-mail: dwestbro@nas.edu



Dorothy Zolanz, Ph.D.  
Director  
Board on Chemical Sciences & Technology  
Division on Earth and Life Studies  
Telephone: (202) 334-3083  
E-mail: dzolanz@nas.edu

The National Academies consists of four organizations: the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, and the National Research Council. The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering. **This proposal is submitted by the NATIONAL ACADEMY OF SCIENCES (NAS), which assumes full technical and legal responsibility under its Act of Incorporation for the work to be carried out under any resultant agreement.** We are a nonprofit publicly supported organization exempt from federal income tax under Internal Revenue Service Code section 501(C)(3). The Taxpayer Identification Number is 53-0196932. DUNS Number is 04-196-4057. **Awards resulting from this proposal should be issued to NATIONAL ACADEMY OF SCIENCES and payment directed to:**

**National Academy of Sciences**  
Accounting Office  
ATTN: Cash Management Section  
500 Fifth Street, NW, Room T 433C  
Washington, DC 20001  
Telephone: 202-334-33518 or 202-334-1476

(rev. 10/21/06)

**INHERENTLY SAFER CHEMICAL PROCESSES:  
THE USE OF METHYL ISOCYANATE (MIC) AT BAYER CROP SCIENCE**

**REVISED PROPOSAL 10-DELS-178-01**

**PROJECT CONTEXT**

Public Law 111-88 (the Department of the Interior, Environment, and Related Agencies Appropriations Act, 2010) directs the Chemical Safety and Hazard Investigation Board (CSB) to conduct “a study by the National Academy of Sciences to examine the use and storage of methyl isocyanate including the feasibility of implementing alternative chemicals or processes and an examination of the cost of alternatives at the Bayer CropScience facility in Institute, West Virginia.”<sup>1</sup>

For a number of years, the Bayer facility in Institute<sup>2</sup> has stored approximately 200,000 pounds of methyl isocyanate (MIC), which has been used as an intermediate to produce carbamate pesticides, including carbofuran, carbaryl, aldicarb, methomyl, and thiodicarb (Larvin). It is the only remaining site in the U.S. which manufactures and stores large quantities of MIC, the chemical released in the Bhopal disaster of 1984. In August 2009, one year after a serious explosion and fire near an aboveground MIC storage tank, Bayer announced a plan to reduce the maximum inventory of MIC at the Institute site by 80% and to eliminate aboveground storage of the chemical. This plan, which is currently being implemented, would leave approximately 40,000 pounds of MIC stored underground at the site on an ongoing basis. To achieve the inventory reduction, Bayer plans to use its existing carbamate manufacturing technology but to discontinue the production of two MIC-derived carbamate pesticides, methomyl and carbofuran.<sup>3</sup> This study will focus on further risk-reduction opportunities, above and beyond the envisioned 80% reduction in MIC inventory.

**STATEMENT OF TASK**

The National Research Council will produce a detailed written report, conclusions, and recommendations where appropriate on the following subjects:

1. Review the current industry practice for the use and storage of MIC in manufacturing processes, including a summary of key lessons and conclusions arising from the 1984 Bhopal accident and resulting changes adopted by industrial users of MIC.
2. Review current and emerging technologies for producing carbamate pesticides, including carbaryl, aldicarb, and related compounds.

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<sup>1</sup> Congress appropriated \$600,000 for conducting the study.

<sup>2</sup> The facility was constructed in the 1940's and was developed as a carbamate pesticide manufacturing complex by Union Carbide, which owned the facility from 1947-1986. Bayer CropScience acquired the facility in 2002.

<sup>3</sup> On December 31, 2009, the U.S. Environmental Protection Agency revoked all tolerances for the pesticide, having determined that “dietary, worker, and ecological risks are unacceptable for all uses of carbofuran.”

The review should include:

- a. Synthetic methods and patent literature
  - b. Manufacturing approaches used worldwide for these materials
  - c. Manufacturing costs for different synthetic routes
  - d. Environmental and energy costs and tradeoffs for alternative approaches
  - e. Any specific fixed-facility accident or transportation risks associated with alternative approaches
  - f. Regulatory outlook for the pesticides including their expected lifetime on the market
3. Examine the use and storage of MIC at the Bayer Crop Science facility in Institute, West Virginia:
- a. Identify possible approaches for eliminating or reducing the use of MIC in the Bayer carbamate pesticide manufacturing processes, through, for example, substitution of less hazardous intermediates, intensifying existing manufacturing processes, or consuming MIC simultaneously with its production.
  - b. Estimate the projected costs of alternative approaches identified above.
  - c. Evaluate the projected benefits of alternative approaches identified above, including any cost savings, reduced compliance costs, liability reductions, reduced emergency preparedness costs, and reduced likelihood or severity of a worst-case MIC release or other release affecting the surrounding community.
  - d. Compare this analysis to the inherently safer process assessments conducted by Bayer and previous owners of the Institute site.
  - e. Comment, if possible, on whether and how inherently safer process assessments can be utilized during post-accident investigations.

## **PLAN OF WORK**

### Committee Composition

The committee will include experts with diverse backgrounds, including:

- Process industries
- Chemistry and chemical engineering (including carbamate pesticide manufacturing)
- Process safety
- Economics
- Community organizations (including the interests of Kanawha Valley residents)
- Environmental organizations (including environmental justice issues)
- Community emergency preparedness and response
- Labor organizations representing the process industries



Committee expertise will be required in chemical process engineering, chemical process safety, chemical process management, industrial hygiene, risk management, and economic evaluation. Committee members will be screened for possible conflict of interest, and the committee as a whole examined for overall balance of perspective on the issue at hand, following standard National Research Council procedures. Committee members may be drawn from outside the US as necessary to secure the required expertise.

The committee will carry out its data-gathering through a series of meetings and one site visit as detailed in the preliminary work schedule below. A consultant will be utilized to assist with a detailed literature survey of carbamate pesticide synthesis and manufacturing processes, and a technical writer may be engaged to assist in final drafting and editing of the committee's report.

#### Preliminary work schedule

Month 0: Receipt of funding

Month 1-2: Committee members identified, nominated, and appointed. Initial discussion of committee balance and composition. Committee teleconference to discuss task, data needs, and work plan. Committee establishes working groups responsible for the items in the Statement of Task.

Month 3: First face-to-face committee meeting. Committee discusses statement of task with Chemical Safety Board representatives, revisits committee balance and composition as necessary, and holds initial briefings and data gathering. Working groups refine plans for data-gathering and workplans, agree to outline of final report, and make writing assignments.

Month 5: Second face-to-face committee meeting. Committee participates in a site visit to Bayer facility in Institute, WV. Committee continues data gathering efforts, reviews report draft to date, and deliberates on findings and recommendations. Public hearing held to receive public concerns.

Month 6: Committee teleconferences as necessary.

Month 7: Third face-to-face committee meeting. Data gathering completed. Committee reviews report draft and finalizes findings and recommendations.

Month 8-9: Committee teleconferences.

Month 9: Final report enters NRC report review process.

Month 10: Preparation of response to review.

Month 11: Fourth committee meeting to finalize response to review.

Month 12: Report approved for release. Prepublication version released.

Month 12-15: Report publication and dissemination. Briefings to sponsor and other parties as appropriate. Public briefing in Institute, WV.

#### Dissemination Plan

The dissemination plan targets relevant federal agencies, congressional stakeholders, industrial and trade groups, and non-governmental advocacy groups. Elements may include:

--Briefings to federal agencies. Briefings to the sponsoring agency, U.S. Chemical Safety

and Hazard Investigation Board, as well as the Environmental Protection Agency and the Department of Homeland Security. Briefings of Congressional staff will be planned.

--Outreach to trade press. Coverage in trade and professional press will be sought, with outreach to outlets such as Chemical and Engineering News (American Chemical Society), Chemical Engineering Progress (American Institute of Chemical Engineers), and others.

--Outreach to non-governmental organizations and advocacy groups, especially local community groups.

--A website with project updates and project developments.

#### **DELIVERABLES**

The NAS shall provide a quarterly progress report to the CSB from inception to completion. The NAS should promptly notify the CSB of any problems encountered or other matters that require CSB attention.

The principal deliverable item is a detailed written report of the expert panel addressing each point in Tasks 1-3 above. The report should be produced within 12 months of the initiation of the project.

#### **FEDERAL ADVISORY COMMITTEE ACT (FACA)**

The committee and staff may require access to proprietary information which is exempt from public disclosure as described in title 5 U.S.C. §552(b)(4) i.e. exemption (b)(4) in the Freedom of Information Act (FOIA) and for which a non-disclosure agreement may need to be established between the National Academy of Sciences (NAS) and Bayer CropScience, and other companies as appropriate. The NRC staff will identify the need for and nature of such information as early as possible from the sponsor, the U.S. Chemical Safety and Hazard Investigation Board, and make appropriate arrangements for such access in accordance with NRC procedures in consultation with the NRC's Office of General Counsel (OGC).

#### **PUBLIC INFORMATION ABOUT THE PROJECT**

In order to afford the public greater knowledge of Academy activities and an opportunity to provide comments on those activities, the Academy may post on its website (<http://www.national-academies.org>) the following information as appropriate under its procedures: (1) notices of meetings open to the public; (2) brief descriptions of projects; (3) committee appointments, if any (including biographies of committee members); (4) report information; and (5) any other pertinent information.

#### **PROJECT FUNDING**

The total revised cost to the Chemical Safety and Hazard Investigation Board for this 15-month activity is \$598,777; a revised budget is enclosed.