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

1. REQUISITION NUMBER	PAGE	OF
REQ-4100-09-0002	1	6

2. CONTRACT NO.	3. AWARD/ EFFECTIVE DATE	4. ORDER NUMBER	5. SOLICITATION NUMBER	6. SOLICITATION ISSUE DATE
CPSC-D-09-0003	09/29/2009	0001		

7. FOR SOLICITATION INFORMATION CALL:	a. NAME	b. TELEPHONE NUMBER (No collect calls)	8. OFFER DUE DATE/LOCAL TIME
	Rudi Johnson	301-504-7028	ET

9. ISSUED BY	CODE	10. THIS ACQUISITION IS
CONSUMER PRODUCT SAFETY COMMISSION DIV OF PROCUREMENT SERVICES 4330 EAST WEST HWY ROOM 517 BETHESDA MD 20814	FMPS	[X] UNRESTRICTED OR [ ] SET ASIDE: % FOR: [ ] SMALL BUSINESS [ ] EMERGING SMALL BUSINESS NAICS: 541990 [ ] HUBZONE SMALL BUSINESS [ ] SOLE SOURCE SIZE STANDARD: $6.50 [ ] SERVICE-DISABLED VETERAN-OWNED SMALL BUSINESS [ ] 8(A)

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

15. DELIVER TO	CODE	16. ADMINISTERED BY	CODE
CONSUMER PRODUCT SAFETY COMMISSION DIRECTORATE FOR ECONOMIC ANALYSIS 4330 EASTWEST HIGHWAY ROOM 723-02 BETHESDA MD 20814	EC	CONSUMER PRODUCT SAFETY COMMISSION DIV OF PROCUREMENT SERVICES 4330 EAST WEST HWY ROOM 517 BETHESDA MD 20814	FMPS

17a. CONTRACTOR/ OFFEROR	FACILITY CODE	18a. PAYMENT WILL BE MADE BY	CODE
PACIFIC INSTITUTE FOR RESEARCH AND EVALUATION 11720 BELTSVILLE DRIVE SUITE 900 BELTSVILLE MD 20705-3102 TELEPHONE NO. 301-755-2701		CONSUMER PRODUCT SAFETY COMMISSION DIVISION OF FINANCIAL SERVICES 4330 EAST WEST HWY ROOM 522 BETHESDA MD 20814	FMFS

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

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

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
	TASK ORDER 0001 The contractor shall provide Benefits Assessment support Services, specifically for the subject matter entitled "Incidenece and cost of Carbon Monoxide Poisoning for all ages swimming pool and spa submersions for ages 0-14 and lead poisoning for ages 0-4". Services shall be in accordance with the base contract, the attached description of services and the contractors proposal dated September 21, 2009. The period of performance for *(Use Reverse and/or Attach Additional Sheets as Necessary)*				

25. ACCOUNTING AND APPROPRIATION DATA	26. TOTAL AWARD AMOUNT *(For Govt. Use Only)*
09-PS-EXHR-4100-14125-252H	$112,175.62

27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4. FAR 52.212-3 AND 52.212-5 ARE ATTACHED. ADDENDA [ ] ARE [ ] ARE NOT ATTACHED.

27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4. FAR 52.212-5 IS ATTACHED. ADDENDA [ ] ARE [ ] ARE NOT ATTACHED.

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

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

30a. SIGNATURE OF OFFEROR/CONTRACTOR	31a. UNITED STATES OF AMERICA *(SIGNATURE OF CONTRACTING OFFICER)*
	[signature]
30b. NAME AND TITLE OF SIGNER *(Type or print)* / 30c. DATE SIGNED	31b. NAME OF CONTRACTING OFFICER *(Type or print)*: Kim Miles / 31c. DATE SIGNED: 9-29-09

AUTHORIZED FOR LOCAL REPRODUCTION
PREVIOUS EDITION IS NOT USABLE

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

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23 UNIT PRICE	24. AMOUNT
	this task is September 29, 2009 through September 28, 2012.				
0001	Senior Study Director	92	HR	181.06	16,657.52
0002	Assoicated Study Director	550	HR	127.71	70,240.50
0003	Analysis/Programmer	240	HR	95.42	22,900.80
0004	Secretarial Labor	40	HR	59.42	2,376.80
	The total amount of award: $112,175.62. The obligation for this award is shown in box 26.				

32a. QUANTITY IN COLUMN 21 HAS BEEN

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

32b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE	32c. DATE	32d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE
32e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE		32f. TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE 32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE

33. SHIP NUMBER	34. VOUCHER NUMBER	35. AMOUNT VERIFIED CORRECT FOR	36. PAYMENT	37. CHECK NUMBER
☐ PARTIAL ☐ FINAL			☐ COMPLETE ☐ PARTIAL ☐ FINAL	
38. S/R ACCOUNT NUMBER	39. S/R VOUCHER NUMBER	40. PAID BY		

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

CPSC-D-09-0003/ Task Order 0001

Statement of Work

Incidence and Cost of Carbon Monoxide Poisonings for All Ages, Swimming Pool and Spa Submersions for Ages 0-14 Years, and Lead Poisonings for Ages 0-4 Years

Background

The Consumer Product Safety Commission's (CPSC) major tool for estimating the benefits from the prevention of consumer product related injuries is the Injury Cost Model (ICM). The Commission originally funded the ICM because it recognized the need to measure, on a common basis, the magnitude of a wide range of injuries associated with consumer products. Used in conjunction with injury and fatality data, the ICM permits the CPSC to compare alternative policies designed to reduce the incidence of injuries. However, the Injury Cost Model may not be the best approach to estimate the societal cost of lead poisonings, swimming pool and spa submersion injuries, and non-fire related carbon monoxide poisonings. These injuries are primarily brain injuries with rare but potentially serious long-term neurological sequelae, which may not be fully captured by the Injury Cost Model.

Description of Work

The period of performance is three (3) years from the date of the award of the task order. The contractor shall meet or conference call with CPSC staff within five (5) business days of the assignment of the task to discuss preparation of the study plan. The contractor shall examine the subtasks below and develop a study plan and schedule based on the objectives below within twenty (20) business days of the conference call or meeting. The schedule shall allow time for peer review. CPSC staff will review the study plan within ten (10) business days.

Subtask 1: **Develop estimates of incidence of carbon monoxide poisonings for all ages** and swimming pool and spa submersions for children less than fifteen years old and lead poisonings for children less than five years old. The contractor shall review recent NEISS special studies of submersions, unpublished National Electronic Injury Surveillance System (NEISS) non-fatal submersion data and fatality data compiled by CPSC, and non-fire related hospital admitted carbon monoxide poisonings and, if feasible, acquire or purchase data from the Undersea and Hyperbaric Medical Society/Centers for Disease Control collaborative effort. The contractor shall use various Healthcare Cost and Utilization Project (HCUP) databases (Nationwide Inpatient Sample (NIS), the Kids Inpatient Database (KIDS), and the Nationwide Emergency Department Sample (NEDS), NEISS, and Vital Statistics mortality data to estimate incidence for different levels of medical treatment.

Subtask 2: **Estimate Short-Term and Long-Term Medical Costs**. The contractor shall develop short-term costs for incidence estimates developed in Subtask 1 using charge data from the same HCUP databases and readmission probabilities from HCUP State Inpatient Data (SID). The contractor shall purchase Medicaid data from multiple states. The contractor shall develop long-term medical costs using regression analysis of case control data based on multiple years of state Medicaid data from multiple states. The contractor shall use Medicaid data in estimating the incidence of especially severe cases requiring extraordinary medical attention, such as those in which the victim requires full or part time nursing support or special procedures or equipment. Medical costs shall be in 2007 dollars and discounted at 3 and 7 percent.

Subtask 3: **Develop work loss costs for incidence estimates used in Subtask 1.** For lead poisonings of children less than five years old, the contractor shall update estimates developed by CDC and EPA regarding IQ loss and its impact on future productivity via the IQ and education pathways at 3 percent and 7 percent discount rates in 2007 dollars and include updated costs for special education at both discount rates. The blood lead levels (BLL) of children less than five years old have been measured by the National Health and Nutrition Examination Survey (NHANES). Thus, there are two questions of interest to the CPSC: 1) the present value of the future expected level of work losses for the population less than five years old given the current BLLs, and 2) the impact of an acute hypothetical exposure to lead poisoning, e.g. from ingestion of lead in children's jewelry or toys, given the prevailing levels in the population less than five years old. The contractor shall assume hypothetical acute exposures that raise the peak BLLs by 30, 60, and 90 micrograms/deciliter, respectively, for a child with the most recent available geometric mean BLL. For children under 5 years of age, these peak exposures are large enough to cause different levels of long-term consequences. Higher peak exposures have the potential to be fatal.

For non-fire related carbon monoxide poisonings and hospital admitted submersion injuries, the contractor shall develop work losses based on existing data on analogous brain injuries and consultations with physicians and vocational rehabilitation specialists.

Subtask 4: **Quality of Life Loss**
The contractor shall review the existing literature on willingness to pay to avert IQ losses and Quality Adjusted Life Year (QALY) losses due to lead poisonings. The contractor shall develop a point estimate and an uncertainty range for the QALY losses. The contractor shall also develop QALY estimates for the hypothetical exposures in Subtask 3.

The contractor shall conduct a review of the carbon monoxide poisoning literature to develop probabilities for different neurological sequelae and develop QALY losses from previous work on QALYs for the CPSC.

The contractor shall use discharge data to determine the frequency of moderate and serious neurological sequelae unique to each type of injury. For lead poisonings, the contractor may use outpatient chelation therapy as an indicator of moderate sequelae and inpatient chelation therapy as an indicator of severe sequelae. For submersions the contractor shall search for admission to the ICU and the presence of procedure codes for intubation. Other sequelae, such as the use of physical therapy or speech therapy may be indicators of moderate sequelae for submersion injuries. Patients experiencing non-fire related carbon monoxide injuries may require short-term supplemental oxygen delivered via face mask or hyperbaric oxygen chamber, which may be an indicator of sequelae. These estimates will provide a check on the estimates in the literature.

Two other approaches shall be considered. CPSC has purchased multiple years of jury verdict data for non-fire related carbon monoxide poisonings and lead poisoning injuries. The contractor shall analyze these verdicts using regression equations developed for the ICM.

If the number of cases for each type of scenario is too small, or the verdict data are inconclusive or inconsistent, the contractor shall develop estimates of quality adjusted life years lost based on physicians' ratings for different severities of traumatic brain injuries. All monetized estimates shall be in 2007 dollars.

Delivery:

The contractor shall prepare two status reports for each subtask in fiscal year 2010, with draft reports due February 28, 2010 and August 31, 2010. The reports shall provide detailed information on progress in acquiring and processing data, reviewing the literature, and developing methods to provide the required estimates. They shall identify any challenges and departures from the study plan. For fiscal year 2011, the contractor shall prepare a major draft mid-term report by June 30 of 2011. This report shall provide the results of the literature reviews, description and documentation of the datasets used, and preliminary results for all four subtasks. The contractor shall prepare a draft final report which will provide final results for all four subtasks by June 30, 2012.

All supporting data used in the preparation of the reports shall be provided in either Excel spreadsheets, or SAS datasets. A listing and copies of all articles used for the CO poisoning literature review shall be provided with the draft final report. Reports shall be delivered according to the schedule mutually agreed upon in the study plan. Reports shall be emailed to William Zamula (wzamula@cpsc.gov), preferably in some version of Microsoft Word. CPSC staff shall provide comments on the drafts within 45 days. The Contractor shall then make any needed changes within 45 days. except as noted below.

Technical questions or clarifications about the documents should be directed to William Zamula at 301-504-7709 (voice), 301-504-0109 (fax), or wzamula@cpsc.gov.

Deliverable	Performance Schedule
Conference call or meeting	Within five business days of task assignment
Draft study plan	Within twenty business days of the conference call or meeting
Final Study Plan	Within ten business days of receipt of CPSC comments
First draft status report	February 28, 2010
First final status report	Within twenty business days of receipt of CPSC staff comments
Second draft status report	August 31, 2010
Second final status report	Within twenty business days of receipt of CPSC staff comments
Draft midterm report	June 30, 2011
Final midterm report	Within 45 days of receipt of CPSC staff comments
Draft final report	June 30, 2012
All supporting datasets and documentation	With the draft final report
Final report	Within 45 days of receipt of CPSC staff comments

CPSC-D-09-0003/ Task Order 0001

Statement of Work

Incidence and Cost of Carbon Monoxide Poisonings for All Ages, Swimming Pool and Spa Submersions for Ages 0-14 Years, and Lead Poisonings for Ages 0-4 Years

Background

The Consumer Product Safety Commission's (CPSC) major tool for estimating the benefits from the prevention of consumer product related injuries is the Injury Cost Model (ICM). The Commission originally funded the ICM because it recognized the need to measure, on a common basis, the magnitude of a wide range of injuries associated with consumer products. Used in conjunction with injury and fatality data, the ICM permits the CPSC to compare alternative policies designed to reduce the incidence of injuries. However, the Injury Cost Model may not be the best approach to estimate the societal cost of lead poisonings, swimming pool and spa submersion injuries, and non-fire related carbon monoxide poisonings. These injuries are primarily brain injuries with rare but potentially serious long-term neurological sequelae, which may not be fully captured by the Injury Cost Model.

Description of Work

The period of performance is three (3) years from the date of the award of the task order. The contractor shall meet or conference call with CPSC staff within five (5) business days of the assignment of the task to discuss preparation of the study plan. The contractor shall examine the subtasks below and develop a study plan and schedule based on the objectives below within twenty (20) business days of the conference call or meeting. The schedule shall allow time for peer review. CPSC staff will review the study plan within ten (10) business days.

Subtask 1: **Develop estimates of incidence of carbon monoxide poisonings for all ages** and swimming pool and spa submersions for children less than fifteen years old and lead poisonings for children less than five years old. The contractor shall review recent NEISS special studies of submersions, unpublished National Electronic Injury Surveillance System (NEISS) non-fatal submersion data and fatality data compiled by CPSC, and non-fire related hospital admitted carbon monoxide poisonings and, if feasible, acquire or purchase data from the Undersea and Hyperbaric Medical Society/Centers for Disease Control collaborative effort. The contractor shall use various Healthcare Cost and Utilization Project (HCUP) databases (Nationwide Inpatient Sample (NIS), the Kids Inpatient Database (KIDS), and the Nationwide Emergency Department Sample (NEDS), NEISS, and Vital Statistics mortality data to estimate incidence for different levels of medical treatment.

Subtask 2: **Estimate Short-Term and Long-Term Medical Costs**. The contractor shall develop short-term costs for incidence estimates developed in Subtask 1 using charge data from the same HCUP databases and readmission probabilities from HCUP State Inpatient Data (SID). The contractor shall purchase Medicaid data from multiple states. The contractor shall develop long-term medical costs using regression analysis of case control data based on multiple years of state Medicaid data from multiple states. The contractor shall use Medicaid data in estimating the incidence of especially severe cases requiring extraordinary medical attention, such as those in which the victim requires full or part time nursing support or special procedures or equipment. Medical costs shall be in 2007 dollars and discounted at 3 and 7 percent.

Subtask 3: **Develop work loss costs for incidence estimates used in Subtask 1**. For lead poisonings of children less than five years old, the contractor shall update estimates developed by CDC and EPA regarding IQ loss and its impact on future productivity via the IQ and education pathways at 3 percent and 7 percent discount rates in 2007 dollars and include updated costs for special education at both discount rates. The blood lead levels (BLL) of children less than five years old have been measured by the National Health and Nutrition Examination Survey (NHANES). Thus, there are two questions of interest to the CPSC: 1) the present value of the future expected level of work losses for the population less than five years old given the current BLLs, and 2) the impact of an acute hypothetical exposure to lead poisoning, e.g. from ingestion of lead in children's jewelry or toys, given the prevailing levels in the population less than five years old. The contractor shall assume hypothetical acute exposures that raise the peak BLLs by 30, 60, and 90 micrograms/deciliter, respectively, for a child with the most recent available geometric mean BLL. For children under 5 years of age, these peak exposures are large enough to cause different levels of long-term consequences. Higher peak exposures have the potential to be fatal.

For non-fire related carbon monoxide poisonings and hospital admitted submersion injuries, the contractor shall develop work losses based on existing data on analogous brain injuries and consultations with physicians and vocational rehabilitation specialists.

Subtask 4: **Quality of Life Loss**
The contractor shall review the existing literature on willingness to pay to avert IQ losses and Quality Adjusted Life Year (QALY) losses due to lead poisonings. The contractor shall develop a point estimate and an uncertainty range for the QALY losses. The contractor shall also develop QALY estimates for the hypothetical exposures in Subtask 3.

The contractor shall conduct a review of the carbon monoxide poisoning literature to develop probabilities for different neurological sequelae and develop QALY losses from previous work on QALYs for the CPSC.

The contractor shall use discharge data to determine the frequency of moderate and serious neurological sequelae unique to each type of injury. For lead poisonings, the contractor may use outpatient chelation therapy as an indicator of moderate sequelae and inpatient chelation therapy as an indicator of severe sequelae. For submersions the contractor shall search for admission to the ICU and the presence of procedure codes for intubation. Other sequelae, such as the use of physical therapy or speech therapy may be indicators of moderate sequelae for submersion injuries. Patients experiencing non-fire related carbon monoxide injuries may require short-term supplemental oxygen delivered via face mask or hyperbaric oxygen chamber, which may be an indicator of sequelae. These estimates will provide a check on the estimates in the literature.

Two other approaches shall be considered. CPSC has purchased multiple years of jury verdict data for non-fire related carbon monoxide poisonings and lead poisoning injuries. The contractor shall analyze these verdicts using regression equations developed for the ICM.

If the number of cases for each type of scenario is too small, or the verdict data are inconclusive or inconsistent, the contractor shall develop estimates of quality adjusted life years lost based on physicians' ratings for different severities of traumatic brain injuries. All monetized estimates shall be in 2007 dollars.

Delivery:

The contractor shall prepare two status reports for each subtask in fiscal year 2010, with draft reports due February 28, 2010 and August 31, 2010. The reports shall provide detailed information on progress in acquiring and processing data, reviewing the literature, and developing methods to provide the required estimates. They shall identify any challenges and departures from the study plan. For fiscal year 2011, the contractor shall prepare a major draft mid-term report by June 30 of 2011. This report shall provide the results of the literature reviews, description and documentation of the datasets used, and preliminary results for all four subtasks. The contractor shall prepare a draft final report which will provide final results for all four subtasks by June 30, 2012.

All supporting data used in the preparation of the reports shall be provided in either Excel spreadsheets, or SAS datasets. A listing and copies of all articles used for the CO poisoning literature review shall be provided with the draft final report. Reports shall be delivered according to the schedule mutually agreed upon in the study plan. Reports shall be emailed to William Zamula (wzamula@cpsc.gov), preferably in some version of Microsoft Word. CPSC staff shall provide comments on the drafts within 45 days. The Contractor shall then make any needed changes within 45 days, except as noted below.

Technical questions or clarifications about the documents should be directed to William Zamula at 301-504-7709 (voice), 301-504-0109 (fax), or wzamula@cpsc.gov.

Deliverable	Performance Schedule
Conference call or meeting	Within five business days of task assignment
Draft study plan	Within twenty business days of the conference call or meeting
Final Study Plan	Within ten business days of receipt of CPSC comments
First draft status report	February 28, 2010
First final status report	Within twenty business days of receipt of CPSC staff comments
Second draft status report	August 31, 2010
Second final status report	Within twenty business days of receipt of CPSC staff comments
Draft midterm report	June 30, 2011
Final midterm report	Within 45 days of receipt of CPSC staff comments
Draft final report	June 30, 2012
All supporting datasets and documentation	With the draft final report
Final report	Within 45 days of receipt of CPSC staff comments

PIRE

... merging scientific knowledge and proven practice to create solutions that improve the health, safety and well-being of individuals, communities, nations, and the world.

CPSC Task Order 1 Incidence and Cost of Carbon Monoxide Poisoning for All Ages, Swimming Pool and Spa Submersions for Ages 0-14, and Lead Poisoning for Ages 0-4

In response to
CPSC-Q-09-0244
REQ-4100-09-0002

September 21, 2009

Pacific Institute for Research and Evaluation
Calverton, MD

Calverton Office Park 11720 Beltsville Drive, Suite 900 Calverton, MD 20705-3111

Table of Contents

All three of these injuries primarily affect brain function. We need to analyze, how often do medically treated cases occur, how often sequelae lasting more than one week ensue, and what medical costs, work losses, and quality of life losses result.

Subtask 1. Estimate Incidence

We propose to use HCUP-KIDS (for submersion and lead poisoning), HCUP NIS (for carbon monoxide (CO) poisoning), HCUP NEDS (for lead and CO poisoning), NEISS-AIP (for submersion), and Vital Statistics mortality data supplied by CPSC to estimate incidence.

In analyzing CO poisoning in the HCUP files, we will exclude cases paid by Worker's Compensation. Among the non-occupational HCUP cases, unintentional, non-transport poisoning with carbon monoxide will be identified by cases with an external cause code between E868.2 and E868.9 or with diagnosis code 986 AND an external cause code of E868.01 or E868.02. We will allocate some cases with diagnosis code 986 and no external cause code into the incidence count. We will allocate by age group and gender using the percentage of cases with diagnosis 986 and an external cause code that were E-coded as unintentional non-transport (as opposed to E818, E838, E844, E952.0, E952.1, E982.0, or E982.1). Given the paucity of patient information on a discharge record, a more sophisticated allocation using regression methods is not likely to be fruitful. (The only explanators we could add beyond age group and sex would be payer and a co-morbidity index.) In the mortality files, we will exclude work-related cases. T58 is the relevant diagnosis code, with X47 the eligible cause code and cause codes V93, X67, and Y17 excluded. We also will seek data from the Hyperbaric Medical Society/CDC collaborative effort and incorporate it as appropriate.

Lead poisoning will be identified by diagnosis 984 and/or external cause code E861.5 or E866.0. The relevant mortality diagnosis code is T56.0 and cases with an intentional or undetermined intent code will be excluded.

Submersion will be identified by diagnosis 984 or 994.1 and/or external cause codes E830, E832, or E910. Unfortunately, ICD9-CM does not distinguish swimming pool and spa submersions from bucket and open body of water submersions. Mortality data code submersion deaths with a diagnosis of T75.1. Codes W67 (while in swimming pool) and W68 (following fall into swimming pool) clearly distinguish the target submersions from other submersions.

We propose to examine two approaches to estimating the proportion of the nonfatal submersions that is associated with pools and spas. The first is to use the unpublished NEISS data including special investigation data supplied by CPSC to estimate the percentage of cases by hospitalization status that result from swimming pool or spa submersions. It is unclear if enough cases will exist to allow this ratio to be computed just for children under age 14 or to provide a breakdown within that age range. The second is to compute this percentage from the mortality cases. The mortality assessment also will allow us to determine the sensitivity of the percentage distribution to the age distribution. We suspect we ultimately will be guided by the mortality split in allocating total non-fatal cases, but that the NEISS-AIP data will allow us to differentiate the splits for admitted cases versus treated and released cases.

Estimate Work Loss Costs

The present value of future productivity losses (wage work and household work) will be provided at 3% and 7% discount rates. EPA and CDC have analyzed the long-term productivity losses associated with childhood lead poisoning. The relationship between childhood lead poisoning and subsequent IQ loss is well established in the literature (Grosse, 2002; Gould, 2009, Needleman, 2004; Schwartz, 1994a). Considerable attention has been focused on Blood Lead Levels (BLL) of children ≥ 10 μg/dl. Of late, research is beginning to focus on the impacts of lower range BLLs ranging from 2-10 μg/dl. CDC (2004) found no level of lead exposure below which adverse effects of health do not occur (Gould, 2002). Therefore any positive BLL in children leads to individual and societal costs. Grosse (2002) and Schwartz (1994b) (relying heavily on the classic work by Needleman) also analyzed the impact of lower IQ levels on future earnings potential. Like the IQ impact, this relationship is relatively invariant over time. Thus, future work loss cost can be estimated by inflating the estimates of average potential earnings and household production lost from the earlier EPA and CDC studies into current dollars. We will estimate costs assuming hypothetical exposures of 30, 60, and 90 micrograms/deciliter atop the geometric mean blood lead level of children ages 0-5 computed from the most recent National Health and Nutrition Examination Survey data that are available (Jones, Homa et al., Trends in Blood Lead Levels and Blood Lead Testing Among US Children Aged 1 to 5 Years, 1988–2004, Pediatrics, 123:3, e376-e385, 2009).

EPA also has analyzed the costs of special education for children with lead-induced IQ deficits. We propose to use their estimates of the frequency of special education usage and update the associated costs with current data from the U.S. Department of Education.

For submersion, children with severe sequelae generally do not survive to working age, meaning their lifetime productivity is lost (an observation we propose to verify using the Medicaid data). Unless the child is placed in residential care, one parent also typically will lose the majority of their productivity until the child dies. Our current injury costs include poor estimates of the probability of work-related disability for hospital-admitted submersion survivors with moderate sequelae.

Surprisingly, although many studies have analyzed the longer term impairments associated with CO poisoning, a quick literature search (which we propose to flesh out) did not reveal data about the impact on permanent work-related disability. Two data sources that are available are the not-fully-representative submersion estimates in Zamula (1987) and estimates we can derive by calling half a dozen leading forensic specialists in vocational rehabilitation. Dr. Miller is in regular communication with appropriate specialists. A final approach to try is to use the work loss estimates that we developed for NHTSA for traumatic brain injury of different severities and call six physicians knowledgeable of pediatric drowning to seek advice on the outcome severity distribution for submersion cases with sequelae.

Quality of Life Loss

EPA took a jury verdict approach to value the quality of life loss associated with lead exposure (Lopez et al. 1995). Miller (2000) reviewed QALY loss estimates related to reduced IQ. Agee and Crocker (1994) used an averting behavior model to look at WTP for information about reducing children's blood lead levels. Agee and Crocker (1996) examined parental decisions about obtaining child chelation therapy to estimate parental WTP to reduce impairment risk resulting from lead exposure. Lutter (2000) converted their estimates into WTP per IQ point lost. We will systematically review the available estimates and develop a best value and an uncertainty range.

For CO, systematic reviews of the literature give probabilities of various sequelae (Lavonas 2007, Weaver et al. 2007, Weaver 2009). We will search the medical records for confirmatory information on hyperbaric oxygen use and oxygen administration by face mask. In its current work for CPSC, PIRE is converting that information into monetized QALY loss estimates that we can use in the proposed study. For submersions, discharge to inpatient rehabilitation or long-term care, intensive care utilization, and intubation procedure codes can be used to infer the frequency of severe sequelae. Receipt of services like physical therapy or speech therapy can be used to infer the frequency of more moderate sequelae from the Medicaid data. Those same indicators can be used to make a second CO estimate, with comparison of the estimates yielding insight into accuracy. As well as developing a best estimate of the sequelae distribution, we propose to develop an uncertainty range. We also will experiment with two other estimating approaches.

We propose to value the sequelae using the jury verdict data that CPSC has purchased on lead and non-fire-related carbon monoxide poisoning. if the data are too sparse or inconclusive, our fallback position is to use the impairment based QALY losses that we developed for NHTSA for traumatic brain injury of different severities and the physician estimates of the outcome severity distribution for cases with sequelae.

Staffing Plan and Time Schedule

	Incidence & Acute Medical	WTP/Work	Reporting	Total
Study Director	16	32	44	92
Associate Director	150	256	144	550
Analyst	160	80	0	240
Secretarial	0	0	40	40
Total	326	368	228	922