Increasing Adoption of Cost-effective Rollover Protective Structures (CROPS) by Farmers and Manufacturers

Budget Review and
Approval for Federally Sponsored Data Collection

Section A

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A. Justification

A.1 Circumstances Making the Collection of Information Necessary

Under Section 20(a)(1) of the Occupational Safety and Health Act (29 U.S.C. 669)**,** NIOSH is tasked with conducting research involving innovative methods, techniques, and approaches for dealing with occupational safety and health problems (Appendix A). This is a new information collection seeking two year approval, designed to help CDC better understand why farmers do not take advantage of engineering solutions which are highly effective in reducing death and injury from tractor rollovers. The study will also identify and address the barriers involved. Additionally, information collected will be used to determine if demonstrations of retrofitting a cost-effective rollover protective structure (CROPS) can change the knowledge, attitude, and behavior of farmers. These changes will lead to an increase in the use of rollover protective structures (ROPS) and impact the design parameters of the CROPS.

Agricultural tractor overturn deaths have been an identified problem since the 1920s, and continue to be the leading cause of agricultural occupational deaths in the United States (Hard et al, 2002). Recent data from the Census of Fatal Occupational Injuries (CFOI) and the Bureau of Labor Statistics (BLS) indicate that the agriculture, forestry, and fishing sector has the third highest number of fatalities (651) and the highest rate of fatalities (29.4/100,000 workers) of any industrial sector. The average worker fatality rate across all industrial sectors is 3.6 deaths per 100,000 workers. Tractor fatalities account for the largest single identifiable source of occupational fatalities in the agriculture, forestry and fishing BLS industry sector. Approximately 200 fatalities occur per year, an average that accounts for about 1/3 of all occupational fatalities in the agricultural production sector.

ROPS have been proven to be an effective engineering intervention. CROPS are a type rollover protective structure which are designed to be less costly and easier to mount (retrofit) to tractors for individual installation (Harris, et al, 2005). Installing ROPS on retrofittable tractors would reduce fatalities from tractor rollovers by more than 80% and nonfatal injuries by about 53% (Myers & Pana-Cryan, 2000). However, barriers continue to exist which prevent the large scale adoption of ROPS on tractors. One of the primary barriers appears to be the financial cost, but there are likely other barriers which are influential as well (Hallman, 2005).

NIOSH surveillance has indicated that of the 4.7 million tractors in use on farms in the United States, 1.7 million are without ROPS. NIOSH has developed designs and conducted testing for CROPS, but has yet to get the design into the field (Owusu-Edusei & Biddle, 2007a; Owusu-Edusei & Biddle, 2007b; Owusu-Edusei, 2008).

This study will conduct field demonstration projects for retrofitting CROPS. Previously published studies of ROPS retrofitting (May et. al, 2006; Sorensen et. al, 2006; Hallman, 2005) have not utilized demonstration projects to determine the effect on farmers' knowledge, attitudes, and behaviors related to ROPS retrofitting. This study will access the farmers willingness to retrofit their tractor with a CROPS or ROPS structure and will also identify barriers to farmers retrofitting these structures on their tractors. Additionally, comparisons can be made to a previous New York study on similar questions to determine if changes are occurring among farmers.

Privacy Impact Assessment

<u>Overview of Data Collection System</u>

The study will use stakeholder input to identify barriers to adoption, and approaches for encouraging farmers to retrofit their tractors with CROPS. With the assistance of state collaborators/contractors, the initial phase of the project will identify the study population—farmers in two selected states who use tractors for which a CROPS prototype has been developed by NIOSH. New York and Virginia have been selected because of their high tractor rollover fatality rate, the contractors' well established relationships with farming communities in their respective states, and because they currently conduct a limited ROPS retrofit program within their state ((New York Center for Agricultural Medicine and Health ("NYCAMH") and Virginia VA Farm Bureau Insurance ("VAFB")). Both NYCAMH and VAFB have a database which includes a population of farmers who have previously contacted their respective ROPS retrofit programs and expressed an interest in retrofitting a tractor, but did not follow through with the process. This database will be used for the CROPS demonstrator subjects.

The database also includes the farmer's contact information along with the type of tractor to retrofit. This information will be matched to the prototype designs for CROPS which NIOSH engineers have developed and tested for five tractors: Ford-8N, Ford-3000, Ford 4600, Ford-4000 and Massey-Ferguson 135. According to a 1993 national farm survey (OMB #0535-022) conducted by the U.S. Department of Agriculture's National Agricultural Statistical Service, these models of tractors are among some of the more popular tractors which do not have ROPS in use on farms (Myers et al, 1998). Thirty farmers in Virginia and thirty in New York will be selected from the list of eligible farmers who indicate they would be willing to be a CROPS demonstrator. Based on previous tests by NIOSH personnel, it is anticipated that the CROPS retrofit demonstration procedure should require between 2 – 4 hours of time and effort. Video taping of the procedure will be done in order to capture the installation procedures and to determine if any ergonomic issues are revealed with the CROPS retrofitting process.

Farmer demonstrators will complete a pretest mailed to them prior to the date of the CROPS retrofit demonstration on their farm (Appendix C.1a & F.1). On the date of the scheduled CROPS demonstration, the observers will have privacy act information and consent information read to them (Appendix F.2). Next, they will take a pretest which will last approximately 15 minutes (Appendix C.2a) while the demonstration is being set-up and the demonstrator is familiarizing himself with the CROPS assembly instructions (Appendix I). Farm tractor/owner demonstrators will retrofit a tractor with a CROPS while observers watch the process, which should take approximately three hours. At the end of the CROPS demonstration and while still at the farm demonstration site, the observers and the demonstrator will take a test (Appendix C.1b & C.2b). About one year later both observers and demonstrators will be mailed a post-test (Appendix C.1c & C.2c).

Participants will be classified as either a demonstrator or an observer. Surveys will be conducted by paper-and-pencil and consist of a pre-test, a test and a post-test. New York and Virginia contractors will be responsible for contacting and enrolling CROPS demonstrators and observers and making any follow-up contacts. They will also collect all hardcopy data.

Data will be collected in the following three stages for the CROPS demonstrator subjects:

- A pretest to determine their interest in participating, gather base levels of knowledge, attitudes, and behaviors regarding ROPS; and to gather demographic information.
- A test to assess their experience in retrofitting a CROPS and their knowledge, attitudes, and behaviors toward CROPS after the retrofit demonstration.

- A post-test (one year follow-up survey) to determine if they are satisfied with their decision to retrofit a CROPS and if they have any additional issues or concerns regarding the CROPS.

Data will be collected in the following three stages for the observers:

- A pre-test to gather base levels of knowledge, attitudes, and behaviors regarding ROPS prior to the CROPS retrofit demonstration along with demographic information.
- A test to assess their perception as to the utility and value of the design, along with the process for retrofitting CROPS and their knowledge, attitudes, and behaviors toward CROPS after the retrofit demonstration.
- A post-test (one year follow-up survey) to assess any level of impact remaining over time.

Upon completion of the proposed research, the data will be maintained by the NIOSH Division of Safety Research (DSR) as "active" files for a period of up to five years due to their unique and intrinsic value to researchers. Subsequently, the data will be maintained as archived protected data files for a period of up to 20 years in accordance with the CDC Records Control Schedule.

Items of Information to be Collected

Demographic information as well as questions regarding the respondent's knowledge and opinion of ROPS/CROPS will be asked. Information in Identifiable Form (IIF) will be collected such as the respondent's name and mailing address. The state collaborators (contractors) will collect all paper and pencil tests, obtain follow-up information for the post-test mailing, and give the surveys to the NIOSH project officer for data entry. Electronic data files will not use any personal identifiers (name or contact information), but will be assigned a numeric code. This code will not be based on any personal identifying information. A list will be maintained with this information until the final survey results have been received and entered into an electronic database file. All hardcopy lists will be shredded and any electronic lists will be deleted from the computer/storage files at the end of five years.

Identification of Website(s) and Website Content Directed at Children under 13 Years of Age

The information collection does not involve any web-based data collection or websites specifically directed at children under 13 years of age.

A.2 Purpose and Use of Information Collection

The proposed project will utilize the information collected to identify barriers and approaches for encouraging farmers to retrofit a CROPS/ROPS to their tractor(s). Base levels of knowledge, attitudes, and behaviors will be collected and established by means of a pre-test, which will be compared to a test and post-test, to determine the role of the demonstration project in having an impact on the tractor owner/operators and observers. The post-test will be a one year follow-up survey of the observation group and demonstration group to assess any level of impact remaining.

Using a demonstration study to determine the effect on changing farm tractor owner/operators attitudes toward retrofitting ROPS on tractors will fill a gap in researcher's and practitioner's knowledge of the effectiveness of this type of intervention. The project has practical utility in that it will produce and disseminate information that highlights barriers and incentives to CROPS retrofitting in the agricultural production sector. Consequently, it will provide an essential piece

for developing effective prevention programs that will reduce agricultural production fatalities and injuries to farm tractor operators and may provide feedback to the designers of the CROPS. Lastly, it will place 60 CROPS on tractors which will dramatically reduce the risk of death and injury due to tractor rollovers to those tractor operators. If this data is not collected, then there is no expectation that anything will change to impact the 200 deaths which occur to tractor owner/operators each year.

The demographic data collected will be used to determine if the respondents are similar to the state's farm population, as described by the USDA/NASS Census of Agriculture. Information will also be collected on whether or not the respondents perceived CROPS as being an effective intervention as well as the impact that the demonstrations had on changing the farmer's knowledge and opinion towards ROPS retrofitting.

Study results will be used to inform further research activities in the agricultural production sector and better target prevention efforts that will reduce injuries and fatalities resulting from tractor rollovers. Information transfer of these results will be an integral part of the project. The transfer will be a collaborative effort of all parties involved especially the participating state collaborators/contractors, and DSR. These stakeholders will help translate research findings, determine the best way to disseminate the findings to farmer populations in their states, and potentially suggest areas for future research. The research translation will include presentations/reports to stakeholders, including NYCAMH and VA FB, along with the farmers who participated in the research study (if they desire). Results will also be disseminated to agricultural safety and health practitioners, researchers and farmers in more publicly accessible formats such as agricultural trade shows and trade journals. These networks will be a key component to effectively disseminating the findings from the study and translating them into practice. The results will also be distributed to the seven extramural NIOSH Centers for Agricultural Disease and Injury Research, Education, and Prevention for their use in implementing tractor retrofit programs.

It is anticipated that the study results will be disseminated to academic audiences using peer-reviewed publications and professional presentations. These products will describe the knowledge, attitudes, and behaviors of farmers in the study regarding CROPS/ROPS to those in the agricultural safety and health field and suggest areas in need of further research. It is anticipated that the scientific community will use this information to further conduct research in the area of agricultural safety and health, specifically as it relates to retrofitting tractors with CROPS or ROPS.

Funding for the project has been provided by National Occupational Research Agenda (NORA) intramural funds. The funds also pay for contractor services needed for data collection procedures as well as travel for demonstration purposes. Base NIOSH funds will cover DSR staff time for administrative tasks such as HSRB and OMB package preparation, data analysis, and product development (manuscripts, presentations, and reports).

A.3 Use of Improved Information Technology and Burden Reduction

Data for the study will be collected via a paper-and-pencil questionnaire. Input was received from the state partners (contractors) that the least burdensome manner with which to collect data would likely be a paper-and-pencil questionnaire. Scheduling phone or face-to-face interviews would be problematic for the farmers as they have work schedules which are hard to predict. In addition, it was thought participants may prefer to answer potentially sensitive questions without a third party (interviewer) involved. Additionally, it is believed that having the respondents

answer the survey questions at the demonstration site will result in a higher response rate and potentially greater completion rate for the post-test, since respondents who have already answered the previous questionnaires maybe more vested in the research. Thus, no data will be submitted or collected electronically using magnetic media, electronic mail, or electronic data. This questionnaire includes questions from a survey developed with a farmer population by the NYCAMH (Sorensen, 2006; May, 2006). Additional questions were added to the survey only where necessary in order to reduce the overall burden on the respondents.

A.4 Efforts to Identify Duplication and Use of Similar Information

The principal investigator has worked in the area of agricultural injury prevention for almost two decades and is well known in the field. His work and contacts in the area of agricultural injury prevention has made him aware of most of the activity which is occurring or has occurred in the area of tractor safety. This is what led him to seek out the New York and Virginia collaborators (contractors) and utilize the New York survey in the current data collection effort. The subset of the population who are farm tractor owner/operators will be compared to earlier research survey results from the state of New York to assess whether there are any differences or similarities between them. Additionally, while not a main research emphasis, analyses will be conducted for any significant differences among the means of this subset of the population between the two states.

Virginia borders the state of West Virginia where the project team resides and New York is within close physical proximity. This is important as a team of NIOSH/DSR personnel are going to be at the demonstration sites to assist the farmers in the retrofitting process. A trailer of tools, parts, and equipment will be driven to the sites for this purpose. The proposed study is unique in that it allows farmers to assess their peers and assess the impact at the demonstration site and then about one year later. The observers will be queried for their perception as to the utility and value of the design, along with the process for retrofitting CROPS. Additionally, the demonstrator will be asked questions regarding the difficulty or ease of the process of retrofitting the CROPS which could impact the design of the CROPS. Also, at the demonstration site and one year later, tests will be conducted with the farm tractor owner/operators to determine if they are satisfied with their decision to retrofit a CROPS. They will also highlight any additional issues or concerns regarding the CROPS and assess their knowledge toward CROPS. Videotaping of the procedure will be done in order to capture the installation procedures and to determine if any ergonomic issues are revealed with the CROPS retrofitting process.

A.5 Impact on Small Businesses or Other Small Entities

Since the respondents are small family-owned farms, they would qualify as small businesses. Efforts have been utilized to collect the least amount of information possible in order to reduce the burden of time on the respondents.

A.6 Consequences of Collecting the Information Less Frequently

Respondents will be asked to complete a pre-test, a test and a post-test (about one year later). Observers will complete the pre-test and test at the demonstration site and the post-test about one year later. Farm tractor owner/operator CROPS demonstrators will complete the pre-test prior to the demonstration date in order to establish a pool from which to select the number of demonstrators needed, complete the test at the demonstration site after retrofitting and the post-test about one year later. There are no legal obstacles to reduce the burden.

A.7 Special Circumstances Relating to the Guidelines of 5 CFR 1320.5

There are no special circumstances. This request fully complies with the regulation 5 CFR1320.5

A.8 Comments in Response to the Federal Register Notice and Efforts to Consult Outside the Agency (101-442)

A. 60-Day Federal Register Notice Information

A 60-day Federal Register notice was published in the Federal Register for public comment on September 21, 2009, vol. 74, No. 181, pp. 48078-48079. One public comment was received. The comment and the response can be found in Appendix H.

A.8.b Consultation with Persons Outside the Agency

The following individuals were consulted in 2007-2008 of the research project by the principal investigator to gain support and advice from state partners who were conducting limited state ROPS retrofit programs. These individuals were:

John May, MD – Director, New York Center for Agricultural Medicine and Health, Cooperstown, NY, 607-547-048, john.may@bassett.org.

Bruce Stone – Safety Manager, Virginia Farm Bureau Insurance Company, Richmond, VA, 804-290-1381, Bruce.Stone@vafb.com.

In 2007, the study protocol was reviewed by external peer reviewers through the NORA intramural process. The specific reviewers were unknown to the PIs. The comments of the external reviewers are attached (Appendix D).

A.9 Explanation of Any Payment or Gift to Respondents

In return for demonstrating how to install (retrofit) their model of tractor with a prototype CROPS to peers, the demonstrator farmers will receive at no cost the CROPS which they install on their tractor, an estimated $800.00 value. In addition, the demonstrator farmers will be asked to identify/recruit other persons who potentially would be interested in observing the demonstration of CROPS retrofitting (i.e., their neighbors), answering demographic questions and questions regarding their knowledge, attitudes and beliefs about CROPS/ROPS. Also, the demonstrator farmer will be asked questions regarding the difficulty or ease of the process of retrofitting the CROPS and about one year later a follow-up will be conducted with the farm tractor owner/operators to determine if they are satisfied with their decision to retrofit a CROPS and if they have any new or additional issues or concerns regarding the CROPS. This aspect of the study will provide user feedback to NIOSH and partner developers on assembly issues for a CROPS design retrofit under field conditions.

A.10 Assurance of Confidentiality Provided to Respondents

The protocol for this study has been reviewed and approved by the NIOSH HSRB under an expedited review. See Appendix E for a copy of the HSRB approval. The state collaborators (contractors) will select potential CROPS tractor owner/operator demonstrators according to geographic proximity in order to complete two CROPS demonstrations per day with the

associated data collection. Respondent's personally identifying information (name and mailing address) will be kept for follow-back (post-test) purposes. Virginia has a proprietary database and will be making all the contacts for the CROPS demonstration purposes while state collaborators (contractors) will enroll observers for the CROPS demonstrations. New York and Virginia will contact and enroll the farm tractor owner/operator demonstrators. Below is a brief summary of the assurances of confidentiality as it relates to informed consent and information/data management.

Included in the survey is specific text that explains the purpose of the research project and covers the required items found in an informed consent, including protection of their individual responses during the release of the information. A waiver of written informed consent for the observers has been granted by the HSRB as collecting written informed consent would likely be detrimental to the response rate of the study. The written and oral script of informed consent which deals with the confidentiality of the data is in Appendices F.1 and F.2

The paper-and-pencil questionnaire of the farm tractor owner/operators CROPS demonstrators and observers will be collected by the state collaborators (contractors). Once received by NIOSH, the hard copy data will be entered into an electronic data file protected by a firewall and will be stored on password-protected computers or a LAN with controlled access. All paper copies will be stored in locked file rooms or cabinets, and data access will be restricted to those involved in the study. Final disposition of the data will be handled in accordance with federal recordkeeping requirements. All NIOSH staff that have access to this data will be required to keep their confidentiality training up-to-date.

A.11 Justification for Sensitive Questions

There are questions on the survey instrument which may be considered sensitive. Information on demographics and economic information is necessary so that comparisons can be made between the study sample with the states farm population Also, there is a relationship between the economic level of the farm, family income, and ROPS usage by farmers. Since the survey is voluntary, respondents may refuse to answer any questions. Respondents are informed of their right to refuse participation in the introductory letter or the oral presentation at the demonstration site.

A.12.A Estimates of Annualized Burden Hours and Costs

A telephone survey of farmers using similar questions was conducted by researchers in New York (Sorensen JA, et al., 2006) and it took about 7 minutes with no identifiers being collected. It was thought that with the demographic information being collected and with informed consent that 15 minutes would be the amount of time needed. No formal pretest was conducted.

The sample size for the survey is estimated to be approximately 400 farm tractor owner/operators, fabricators and persons of influence in the community. The paper-and-pencil questionnaire consists of a pre-test, a test and a post-test about one year later. Each survey takes about 15 minutes to complete, resulting in an annualized hour burden estimate of 753 hours.

Estimated Annualized Burden Hours

Respondents	Form Name	No. of Respondents	No. of Responses	Average Burden per	Total Burden

			per Respondent	Response (in hours)	Hours
Demonstrators	Pretest	30	1	15/60	8
	Test	30	1	15/60	8
	Posttest	30	1	15/60	8
	Demonstration	30	1	3	90
Observers	Pretest	170	1	15/60	43
	Test	170	1	15/60	43
	Posttest	170	1	15/60	43
	Demonstration	170	1	3	510
Total					**753**

A.12.B Estimates of Annualized Burden Costs

* These estimates are calculated using the 2007 USDA Census of Agriculture, taking each states (NY & VA) net cash farm income of operation and dividing by the percent of total farm income of total household income to get an estimate of household income. This amount was then divided by 2000 (hours of work in a year) to arrive at a dollar value per hour for each state for farmers. These values were summed and divided by 2 (since there should be equal numbers in each state) to arrive at the final estimated hourly wage rate.

Type of Respondent	Total Burden Hours	Hourly Wage Rate	Total Respondent Costs
Farm tractor owner/operators	114	$17.77	$2,026
Observers	639	$17.77	$11,355
Total	**753**		**$13,381**

A.13 Estimates of Other Total Annual Cost Burden to Respondents or Record Keepers

There are no additional cost burdens for respondents.

A.14 Annualized Cost to the Government

The annualized cost to the government for this project is estimated to be $72,000. The table below summarizes a breakdown of the estimated costs.

Item	FY 2010	FY 2011	FY 2012	Total
Equipment and supplies[1]	$10,000	$10,000	$10,000	$30,000
Contractual	$8,887	$8,887	$8,888	$26,662
Travel	$5,333	$5,333	$5,334	$16,000
Annualized estimate of federal costs	$24,220	$24,220	$24,222	$72,662

A.15 Explanation for Program Changes or Adjustments

This is a new data collection.

A.16 Plans for Tabulation and Publication and Project Time Schedule

It is planned to publish project results in both peer reviewed scientific journals with a high impact number and trade magazines. Additionally, results will be presented at national,

scientific conferences with high public visibility to research audiences. Results will also be disseminated to stakeholder groups via presentation and written reports. Stakeholder groups include the NYCAMH and VA FB. Our projected timeline for the project is detailed in the table below.

Activity	Time Schedule
Recruit and enroll demonstration study participants in two states	1 month after OMB approval
Arrange and coordinate demonstration sites for time/travel efficiency	2 months after OMB approval
Solicit and recruit observers for demonstration sites	2-3 months after OMB approval
Conduct demonstration study project in two states	3-6 months after OMB approval
Conduct follow-up survey of observers/demonstrators regarding their knowledge, attitudes and beliefs regarding CROPS	12 months after OMB approval
Complete data entry of demonstration observer and demonstrator data	13 months after OMB approval
Analyses	13-15 months after OMB approval
Write up and disseminate summary data to study participants	16 months after OMB approval
Publications for trade journals (non peer reviewed)	20 months after OMB approval
Publication(s) ready for submission to peer-review journal	22 months after OMB approval

A.17 Reason(s) Display of OMB Expiration Date is Inappropriate

The OMB expiration date will be displayed.

A.18 Exceptions to Certification for Paperwork Reduction Act Submissions

There are no exceptions to the certification.