

Information Collection Request

Online Training for Law Enforcement to Reduce Risks Associated with
Shift Work and Long Work Hours

SUPPORTING STATEMENT

PART A

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

Claire C. Caruso, PhD, RN, FAAN
Research Health Scientist
National Institute for Occupational Safety and Health, CDC
1150 Tusculum Avenue, MS C-24
Cincinnati, OH 45226-1998
Phone: 513-533-8535
Fax: 513-533-8596
Email: ZHL1@cdc.gov

June 26, 2019

A. Justification

- A1. Circumstances Making the Collection of Information Necessary
- A2. Purpose and Use of Information Collection
- A3. Use of Improved Information Technology and Burden Reduction
- A4. Efforts to Identify Duplication and Use of Similar Information
- A5. Impact on Small Businesses or Other Small Entities
- A6. Consequences of Collecting the Information Less Frequently
- A7. Special Circumstances Relating to the Guidelines of 5 CFR 1320.5
- A8. Comments in Response to the Federal Register Notice and Efforts to Consult Outside the Agency
- A9. Explanation of Any Payment or Gift to Respondents
- A10. Assurance of Confidentiality Provided to Respondents
- A11. Justification for Sensitive Questions
- A12. Estimates of Annualized Burden Hours and Costs
- A13. Estimates of Other Total Annual Cost Burden to Respondents or Record Keepers
- A14. Annualized Cost to the Government
- A15. Explanation for Program Changes or Adjustments
- A16. Plans for Tabulation and Publication and Project Time Schedule
- A17. Reason(s) Display of OMB Expiration Date is Inappropriate
- A18. Exceptions to Certification for Paperwork Reduction Act Submissions

Appendices

Appendix A - Occupational Safety and Health Act

Appendix B - 60-day FRN

Appendix C- Surveys and Diary

C1- Sleep Activity Diary

C2- Demographic and Work Experience Information

C3-Knowledge Survey

C4- Epworth Sleepiness Scale

C5- Pittsburg Sleep Quality Index

C6- Feedback about the Training, Barriers, and Influential People

C7- Change in Behaviors after the Training Program

Appendix D- Online Survey

Appendix E- Informed Consent

Appendix F- Recruitment Email

Appendix G- Email Messages with Links to Study Surveys and Training

Appendix H- Letter and Laminated Card with Study Identification Number

Appendix I- Letters of Support from Police Organizations and Experts

Appendix J- IRB Determination

Appendix K- PIA Document

- Goal of the study is to develop and pilot test a new, online, interactive training program tailored for the law enforcement community that relays the health and safety risks associated with shift work, long work hours, and related workplace fatigue issues and presents strategies for managers and officers to reduce these risks. The long-term goal is to improve the health and safety of law enforcement officers by improving their sleep and circadian rhythm adjustment to shift work schedules.
- The research team will use the results of this first pilot test of the online training program to identify content in need of improvement, obtain preliminary data about knowledge retained, and determine if officers showed changes in their sleep behaviors, sleep duration, and sleep quality after taking the training. The research team will then edit the training to reinforce the content to improve the training.
- Methods. The pilot test will use a one group pre-test, training intervention, post-test design to assess changes in sleep and knowledge before and after the training and collect participants' feedback about the training. The convenience sample will include 30 law enforcement officers who are in their first work experience after graduating from a police academy and 30 experienced law enforcement officers. The pilot study will collect data by using online surveys and actigraphs (small devices worn on the wrist that record activity and estimate times of sleep).
- The participants will be law enforcement officers in their first work experience after graduating from the police academy and experienced law enforcement officers.
- Analyses will include descriptive statistics, paired t-tests, and generalized linear mixed models.

A. Justification

A1. Circumstances Making the Collection of Information Necessary

This is a NEW Information Collection Request for one year of data collection. The regulatory authority for the National Institute for Occupational Safety and Health (NIOSH or the Institute) to carry out this data collection is the Occupational Safety and Health Act of 1970 (29 U.S.C. 657(g) (Appendix A).

Law enforcement officers work in stressful and dangerous conditions to enforce law and order, prevent crime, and protect persons and property. Society needs their vital services around the clock. As a result, police often work during the evening, at night, and sometimes irregular and long hours. Ma and

colleagues (2011) found that 47% of officers in the Buffalo Cardio-Metabolic Occupational Police Stress (BCOPS) Study worked shift work compared to 16% of the U.S. workforce (McMenamin, 2007).

Shift work and long work hours are linked to many health and safety risks due to disturbances to sleep, circadian rhythms, and personal relationships (NIOSH et al., 2015). These work schedules and inadequate sleep are likely critical contributors to the many health problems seen in police. Violanti and colleagues (2013) found that male police officers from Buffalo New York had on average a 22 year lower life expectancy than U.S. white males, and this reduction was more pronounced among younger age categories. Between 2006 and 2014, the annual fatality rates due to occupational injury has been three to five times higher for those in law enforcement than for the average U.S. worker (Bureau of Labor Statistics, 2016). The number of law enforcement officers killed while on the job increased 17 percent in 2014 (Bureau of Labor Statistics, 2015). Police officers have high rates of traditional cardiovascular disease risk factors including hypertension, dyslipidemia, cigarette smoking, sedentary lifestyle, and metabolic syndrome (Zimmerman, 2014). In addition, sleep deficiency leads to neurocognitive and performance deficits including but not limited to poorer decision making and increases in risk taking behavior (Goel et al., 2009; Womack SD, Hook JN, Reyna SH, & Ramos, 2012). One important strategy to reduce these risks is training programs to inform employers and officers about the risks and strategies to reduce the risks.

This project addresses the research priority to develop and test teaching tools to increase knowledge and behavioral changes that reduce sleep deprivation and fatigue due to shift work and long work hours.

This is recommended by several groups of experts: the 2011 NIH (National Institutes of Health) Sleep Research Plan; the Institute for Medicine (Colten & Altevogt, 2006); the NORA (National Occupational Research Agenda) Long Work Hour Team (Caruso, et al., 2006); the American Thoracic Society (Mukherjee et al., 2015); and Healthy People 2020 Sleep Health (2010). Providing training and education

is one of the six core components of fatigue risk management systems that are designed to reduce risks from shift work and long work hours (Lerman et al., 2012). Concern about drowsy driving has been a long-standing public safety concern as evidenced by the hours of service and sleeping berth regulations for commercial truck drivers. Mark Rosekind, PhD, the past Administrator for the National Highway Traffic Safety Administration, published a call to action to prevent risks from sleep deprivation that is prevalent across our society (2015). He reported 20% of vehicle crashes investigated by the National Transportation Safety Board were due to drowsy driving. Dr. Rosekind recommends widespread training about sleep and circadian rhythms to promote better sleep practices and enhanced safety and health nationwide. Drowsy driving is a concern for law enforcement officers who spend a significant amount of their work shifts driving. Lastly, the project advances NIOSH Program priority goals for the Public Safety Sector and cross sector programs for Healthy Work Design and Well-being, Traumatic Injury Prevention, and the Center for Motor Vehicle Safety.

Six letters of support (Appendix I) for this project from law enforcement organizations and experts state the law enforcement community's critical need for online training relaying strategies to cope with the demands of shift work, long work hours, and workplace fatigue (Appendix B). Most law enforcement agencies are small (less than 50 officers). Also, some agencies, such as highway patrols, are often spread out across many miles. This makes online training that is freely available over the internet the best option for delivering this information to them. The research team and their contacts in the law enforcement community know of no other expert group who developing freely available online training on this topic for law enforcement.

A2. Purpose and Use of Information Collection

NIOSH awarded four years of funding from FY17 to FY20 for this Small NORA project. The beginning of the project drafted the online training program and obtained feedback from two focus groups and one training expert. Each focus group had four participants each. One focus group reviewed and gave feedback on half of the training; the other focus group gave feedback on the other half. A police-training expert gave feedback. The project team edited the training to incorporate these suggestions. The next phase of the project is conducting a pilot test of the training in 60 officers. This ICR is for collecting pilot test data.

The research team will use the pilot test data to identify content in need of improvement. They will examine pilot test data about knowledge retained after taking the training, and examine sleep data before and after the training to determine if officers showed improvements in their sleep behaviors, sleep duration, and sleep quality after taking the training. They will examine participants' feedback about the training. The research team will then reinforce content on topics that showed less than desired results on the pilot test. A pilot test in law enforcement officers is critical to identify any areas in need of improvement before NIOSH finalizes it and releases it to the public.

The pilot study will collect data using online surveys (Appendix C) and actigraphs (small devices worn on the wrist that record activity to estimate times of sleep and activity). NIOSH study staff (Dr. Claire Caruso and Evan Jones) will collect all the data.

Data collection for each participant will occur over a 28-day period followed by a 6-week break from data collection, and then a final 14 days of data collection. The following list briefly describes the study's data collection activities.

- 1) Dr. Lois James and Dr. Stephen James, the contractors, will recruit officers to volunteer for the pilot study by word of mouth and emails with personal contacts in the local Spokane Washington law

enforcement community. The email, (Appendix F) Pilot Study Recruitment will briefly explain the study and invite those interested in more information to contact the Project Officer or attend information sessions held by contractor. During information sessions, the contractor will make available copies of the informed consent (Appendix E) and postage paid envelope addressed to the Project Officer.

2) Officers interested in participating in the study will email the Project Officer to set up a phone call with her to learn more about the study. During the initial 30-minute call, the Project Officer will explain the study, assess eligibility to participate, and review with them the study procedures and the informed consent. To be enrolled, the police officer will meet these inclusion and exclusion criteria:

- Police officer currently working full time with no alternate assignment because of injury, illness, or other reasons
- Working fixed night shift including hours of midnight to 6 AM (no rotating work schedules)
- Women officers will not be pregnant or will not be planning to become pregnant during the next 3 months
- No travel across three or more time zones in the previous 3 months or plans for travel across three or more time zones during the 12 week study period
- The 30 new patrol police officers will be on patrol in their first field experience after graduating from the police academy who have worked less than 1 year as a police officer
- The 30 experienced patrol officers will have worked 2 to 10 years as a police officer.

Officers willing to participate will sign the consent (Appendix E), mail it to the Project Officer in a postage paid envelope, and include their contact information (address, phone number, email).

- 2) NIOSH study staff will assign each participant a unique five-digit study identification number (Appendix H. Letter and Image of Study Identification Number), to allow NIOSH study staff to match participant study data and examine responses before and after taking the training program. NIOSH staff will keep the list matching study ID and participant name on an encrypted folder on the NIOSH network. Only NIOSH staff working on this study will have access to the folder and the list. NIOSH study staff will mail the participant a letter and their study ID on a small laminated card (Appendix H). The participant will type their study ID on all their surveys, diaries, and actigraph data. The Project Officer will tell the participant to keep the ID secure and suggest that they take a picture of it and keep the card and picture in safe places. The participants will not share their study number with the contractor, Dr. Lois James who is assisting with the study, or anyone else. Once the data collection has been completed, NIOSH study staff will tell the participant to destroy the laminated card and copies of it.
- 3) The contractor will not have access to the matched list of study ID and participant name. When talking about a participant, NIOSH staff will not use participant name when but rather will refer to the participant's appointment time and date.
- 4) The Project officer and NIOSH study staff will email or text the participant a link to each survey and Sleep Activity Diary at appropriate times during the 12-week study (Appendix G).
- 5) Participant will have a meeting with Dr. Lois James, the contractor. During 15 minutes of the meeting, Dr. James will fit the participant with a wrist actigraph, review the surveys and wrist actigraphs, and answer questions. Then the participant will use an additional 10 minutes to fill out the first set of online surveys on their personal mobile device or laptop, which includes Demographic and Work Experience Information, Knowledge Survey, Epworth Sleepiness Scale, and Pittsburgh Sleep Quality Index (Appendix C, C2 to C5).

- 6) The participant will continuously wear the actigraph and keep a Sleep Activity Diary (Appendix C, C1) for 28 consecutive days (weeks 1 to 4 of the study). The time to fill out the diary is about 1 minute after awaking from the major sleep episode of the day and 1 minute before going to bed. The Sleep Activity Diary and actigraph will be used together to obtain more accurate times of sleep and activity.
- 7) After the initial 14 day pre-training period (week 3 of the study), the Project Officer will email the participant a link to the online training program. The training program for the pilot study is currently on this CDC development website, https://wwwdev.cdc.gov/niosh/z-lab-945/police_training/default.html. The participant will take the 2.5 hour training at times that are convenient across an enforced one-week period. Immediately after taking the training, participants will complete an online post-training survey that takes about 10 minutes and contains the Knowledge Survey and survey called Feedback about the Training, Barriers, and Influential People (how they expect influential people in the participant's life to react to the training content). See Appendix C, C3 and C6.
- 8) At the end of this 4-week period, the participant will met for 10 minutes with Dr. James to return the actigraph. The actigraph data automatically uploads to a secure cloud storage area that is accessible by NIOSH study staff only. NIOSH study staff will download the data to the NIOSH network.
- 9) No data collection occurs during weeks 5 to 10.
- 10) Eight weeks post-training at week 11 of the study, the participant will met with Dr. James for 10 minutes to be fitted with an actigraph.
- 11) The participant will wear an actigraph and keep a Sleep Activity Diary for 14 consecutive days.

12) At the end of week 12, the participant will meet with Dr. James. Five minutes will be used to complete an online survey, which includes the Epworth Sleepiness Scale, Pittsburgh Sleep Quality Index, and Change in Behaviors after the Training Program (Appendix C, C4, C5, C7). An additional 10 minutes of this meeting will be used to return the actigraph and receive a gift card for \$20, which is given to thank the participant for completing the study. The actigraph data automatically uploads to a secure cloud storage area that is accessible by NIOSH study staff only. NIOSH study staff will download the data to the NIOSH network. At this point, data collection ends. NIOSH study staff tell participant to destroy copies of their study identification number.

The pilot study is needed to examine this newly developed online training program for these research questions.

- 1) Are there improvements in police officers' sleep (both sleep quality and quantity) after completing the training program?
- 2) Was there an increase in knowledge about risks and strategies to reduce risks after completing the training program?
- 3) Do responses on survey items indicate the training is clear?
- 4) Do responses on survey items indicate the training is persuasive?
- 5) Do parts of the training need editing to make the messages clearer?
- 6) Do participants report they incorporated the strategies in their personal life?

Before releasing new online training, NIOSH requires pilot testing to get that critical feedback to determine if parts of the training need editing to reinforce or modify sections of the content. Without the pilot test, we will not have evidence about whether the training was persuasive and led officers to make positive changes to their daily lives to improve their sleep and to reduce their sleepiness on the

job. Without the pilot test, the effort over the past 2.3 years to develop the online training program by many NIOSH staff members and contractors will be wasted and the training program will not be released to the public.

Carrying out the pilot test, using the findings to improve the training program, and subsequently releasing the training to the public will benefit law enforcement community who is asking for this type of training program. After taking the training, law enforcement officers and their managers are expected to adopt workplace strategies and personal strategies discussed in the training program to promote their sleep health and minimize disruption to circadian rhythms that can occur from shift work and long work hours. By improving sleep, law enforcement officers will prevent fatigue-related mistakes that can cause a range of problems on their jobs from inappropriate risk-taking behavior to vehicle crashes that cause injury or death. Better sleep and alignment of circadian rhythms with light and darkness will reduce risk for adverse reproductive outcomes and development of many chronic illnesses. The long-term goal is to improve the life span and health of police officers. Expensive early retirements and worker's compensation claims should decrease. A goal is also to help the community by promoting a more alert and better functioning law enforcement workforce who are better able to protect the community.

A3. Use of Improved Information Technology and Burden Reduction

All the data collection will be carried out with online RedCap surveys that take only a few minutes to complete and wearing a wristwatch type device called an actigraph, which records activity to estimate times of sleep and activity. These reduce the data entry burden to the participant and the data collection and processing burden to the research team.

A4. Efforts to Identify Duplication and Use of Similar Information

No known free online training tailored for law enforcement is available and therefore no known pilot study has been conducted. Letters of support (Appendix I) from law enforcement experts and organizations state their critical need for online training to relay strategies to cope with the demands of shift work, long work hours, and workplace fatigue. The California Peace Officer Training Commission, the Washington State Criminal Justice Training Commission, and other large police training organizations are calling for fatigue management training. The research team, the experts, and representatives from law enforcement organizations are not aware of other expert groups who are developing freely available online training on this topic for law enforcement. Bryan Vila Ph.D. has given face-to-face workshops to law enforcement officers and law enforcement agencies across the country on this topic but this type of outreach is not practical from a personnel or cost perspective. The majority of law enforcement agencies (86%) are small with less than 50 officers (Reaves, 2011). In addition, some agencies, such as highway patrols, are often spread out across many miles. Dr. Vila advised the NIOSH website is an ideal location for the online training because of NIOSH's subject matter and technical expertise to produce and maintain the training site over time (personal communication July 27, 2015).

A5. Impact on Small Businesses or Other Small Entities

The participants in the study will be police officers who work in police departments. Police departments are small businesses. Each survey takes a few minutes (1 to 5 minutes) to complete. The research team held the number of questions to the absolute minimum required to assess the training program. Participation in the pilot study should not negatively affect the police departments where participants work.

A6. Consequences of Collecting the Information Less Frequently

The pre-test, training intervention, post-test was designed to get a good assessment of the effect of the online training program on officers' sleep, knowledge gained, and their reaction to the online training

program. The rationale for taking post-test measures immediately after taking the training is to get feedback about the training while it is fresh in participants' minds and to test knowledge retained immediately after the training. The rationale for collecting survey data at week 9 after the training is to give officers time to adapt the strategies into their daily lives. For example, they may need to improve their sleep environment by getting a better mattress and pillow. Also, time may be needed to gain better cooperation and understanding from their family. In addition, participants may need to determine how to adjust their daily behavior patterns to allow more time for sleep. After adapting the strategies, it may take officers a few days to show improvements to their worktime level of sleepiness, sleep duration, and sleep quality. As they continue to use the strategies, further improvements may be seen in their sleep duration, sleep quality, and worktime sleepiness. Spacing the final post-test 9 weeks after the training will provide a measure of longer-term adoption of the behavioral strategies and gains in improved sleep health. Gathering less data will not allow the research team to answer the research questions and gather good evidence about the usefulness of the training program.

A7. Special Circumstances Relating to the Guidelines of 5 CFR 1320.5

This request fully complies with the regulation 5 CFR 1320.5.

A8. Comments in Response to the Federal Register Notice and Efforts to Consult Outside the Agency

A. 60-day Federal Register Notice was published in the Federal Register / Vol. 83, No. 236/Monday, December 10, 2018, 63510-63512 (Appendix B). CDC did not receive public comments related to this notice.

B. The following external experts were consulted during 2016 to provide feedback about the methods for the pilot study. They all approved the study methods and had just a few minor suggestions. The contact information and titles at the time of the consultations are listed below.

- David A. Lombardi, PhD, Co-Director, Occupational Injury Prevention Training Program, Harvard School of Public Health; ph (508) 497 0210; email DAVID.LOMBARDI@LibertyMutual.com
- Michael A. Grandner, PhD, MTR, CBSM, FAASM; Assistant Professor of Psychiatry; Director, Sleep & Health Research Program; College of Medicine, University of Arizona; Email grandner@email.arizona.edu
- P. Daniel Patterson PhD; Assistant Professor, University of Pittsburg, Department of Emergency Medicine; Pattersonpd@upmc.edu; phone 412-864-3836

A9. Explanation of Any Payment or Gift to Respondents

The research team will provide pilot study participants a small token of appreciation for completing the pilot test: a gift card worth \$20. This will be provided to show appreciation for the 5.5 hours they will spend participating and the additional time for traveling for four meetings at Washington State University: 1) to begin the study; 2) at the end of week 4 to return the actigraph; 3) at the beginning of week 11 to be fit with actigraph; and 4) at the end of week 12 to return the actigraph, take the last survey, and receive the gift card. The Washington State University team has found similar tokens of appreciation were useful in their previous studies of law enforcement officers.

A10. Protection of the privacy and Confidentiality of Information Provided by Respondents

The CDC/ATSDR Privacy Act Officer has reviewed this submission and determined that the Privacy Act does apply (Appendix I). Study forms will collect individually identifiable information. NIOSH study staff will assign each participant a unique study identification number that is not based on any personally identifiable information to allow study staff to match the surveys, diary, and actigraph files for each participant. NIOSH study staff will keep the list that matches the study identification number and name on an encrypted folder on the NIOSH network that is only accessible by NIOSH study staff. NIOSH study staff will destroy the list that matches the participant's name and identification number after the study

has been completed. NIOSH study staff will collect participant name, address, email, and phone number to contact the participant during the study. NIOSH will own the data without identifiers.

A11. Institutional Review Board (IRB) and Justification for Sensitive Questions

IRB Approval

NIOSH IRB determined that this pilot study is an activity that is: (1) research; (2) involves human subjects; (3) is not exempt from the regulations governing human subjects research. NIOSH IRB approved the study in October 2018. See Appendix J.

Sensitive Questions

No questions will be sensitive except for asking about race and ethnicity in the demographic survey and alcohol intake on the Sleep Activity Diary (Appendix C, C1 and C2). The pilot study will seek to enroll officers from different races and ethnic groups to get any differing perspectives about the training program.

A12. Estimates of Annualized Burden Hours and Costs

Participants will include 30 new law enforcement officers in their first field experience after graduating from the police academy and 30 experience law enforcement officers. Table A.12.1 provides a listing of the time burden per year for participants to carry out the pilot study including time to take the surveys and meet with research staff. NOTE as instructed in the manual, each row of the table concerns one type of survey or meeting and column 4 lists the number of responses per respondent. See 'A2 Purpose and Use of the Information Collection' for a description of the data collection activities. The time in hours to fill out each survey was calculated by using a stopwatch to time how long it took two NIOSH research staff to fill out each survey. The average time was used. To recruit participants, the NIOSH Project Officer will hold a 30-minute phone call to explain the study, assess if the participant meets the

study criteria, and have them sign the consent form. Participant will have an initial 25 minute face-to-face meeting with, the contractor, Dr. Lois James, who will orient the participant to what they will do in the study, fit them with the actigraph, and have them take the first set of surveys of four online surveys: Demographic and Work Experience Information, Knowledge Survey, Epworth Sleepiness Scale, and Pittsburgh Sleep Quality Index. After the initial meeting, participants will meet with Dr. Lois James three more times for 10 to 20 minutes each time.

- 1) Participants will return the actigraph at the end of week 4 of the study (10 minute meeting).
- 2) At week 11, participants to be fitted with an actigraph (10 minute meeting).
- 3) At the end of week 12 (20 minute meeting), participants will return the actigraph, take the final surveys including Epworth Sleepiness Scale, Pittsburgh Sleep Quality Index and Change in Behaviors after the Training Program. At this meeting, Dr. James will give each the participant a \$20 gift card as a token of appreciation for participating.

The total burden hours for 60 officers to participate is 334 hours. The Department of Labor lists the hourly median salary for police and sheriff patrol officers in Spokane Washington at \$34.99 (https://www.bls.gov/oes/current/oes_44060.htm#33-0000). Nationwide, the lower 10% of police and sheriff patrol officers earn \$17.19 (<https://www.bls.gov/oes/current/oes333051.htm>). Therefore, the cost burden for the 30 new officers to participate is estimated to be \$2871 and for 30 experience officers to participate is estimated to be \$5843. Therefore, total burden cost to the 60 officers to participate is \$8714. See below Table A.12.2 Estimated Annualized Burden Costs.

Table A.12.1 Estimated Annualized Burden Hours

Type of Respondents	Form Name	Number of Respondents	Number of Responses per Respondent	Avg. Burden per Response (in hrs.)	Total Burden (in hrs.)
Law enforcement officers	phone call for recruitment & informed consent	60	1	30/60	30
Law enforcement officers	Initial meeting to fit actigraph, explain surveys, answer questions (additional time to fill out each survey is given below)	60	1	15/60	15
Law enforcement officers	Three 10 minute meetings which will be held at end of week 4, beginning of week 11, and end of week 12 (additional time to	60	3	10/60	30

	complete survey at last meeting given below)				
Law enforcement officers	Knowledge survey is taken twice: during initial meeting and after taking online training program	60	2	5/60	10
Law enforcement officers	Epworth Sleepiness Scale (a survey) is taken twice: during initial meeting and end of week 12	60	2	1/60	2
Law enforcement officers	Pittsburgh Sleep Quality Index (a survey) is taken twice: during initial meeting and end of week 12	60	2	2/60	4
Law enforcement officers	Demographics and work experience	60	1	2/60	2

	survey is taken during initial meeting				
Law enforcement officers	Sleep Activity Diary (every days during weeks 1 to 4 and weeks 11 and 12)	60	84	1/60	84
Law enforcement officers	Online training program (taken during week 3)	60	1	150/60	150
Law enforcement officers	Feedback about Training, Barriers, and Influential People (a survey) is taken after taking the training during week 3	60	1	5/60	5
Law enforcement officers	Changes in Behaviors after Training (a survey) is taken at end of week 12	60	1	2/60	2

Total		334
-------	--	-----

Table A.12.2 Estimated Annualized Burden Costs

Type of Respondents	Form Name	Number of Respondents	Number of Responses per Respondent	Avg. Burden per Response (in hrs.)	Total Burden (in hrs.)	Hourly Wage Rate	Total Respondent Costs
New Law enforcement officers	phone call for recruitment & informed consent	30	1	30/60	15	\$17.19	257.85
Experienced Law enforcement officers	phone call for recruitment & informed consent	30	1	30/60	15	\$34.99	524.85
New Law enforcement officers	Initial meeting	30	1	15/60	7.5	\$17.19	128.925
Experienced Law enforcement	Initial meeting	30	1	15/60	7.5	\$34.99	262.425

officers							
New Law enforcement officers	Three 10 minute meetings	30	3	10/60	15	\$17.19	257.85
Experienced Law enforcement officers	Three 10 minute meetings	30	3	10/60	15	\$34.99	524.85
New Law enforcement officers	Knowledge survey	30	2	5/60	5	\$17.19	85.95
Experienced Law enforcement officers	Knowledge survey	30	2	5/60	5	\$34.99	174.95
New Law enforcement officers	Epworth Sleepiness Scale	30	2	1/60	1	\$17.19	17.19
Experienced Law enforcement officers	Epworth Sleepiness Scale	30	2	1/60	1	\$34.99	34.99

New Law enforcement officers	Pittsburgh Sleep Quality Index	30	2	2/60	2	\$17.19	34.38
Experienced Law enforcement officers	Pittsburgh Sleep Quality Index	30	2	2/60	2	\$34.99	69.98
New Law enforcement officers	Demographics and work experience survey	30	1	2/60	1	\$17.19	17.19
Experienced Law enforcement officers	Demographics and work experience survey	30	1	2/60	1	\$34.99	34.99
New Law enforcement officers	Sleep activity diary	30	84	1/60	42	\$17.19	721.98
Experienced Law enforcement officers	Sleep activity diary	30	84	1/60	42		1469.58

New Law enforcement officers	Online training program	30	1	150/60	75	\$17.19	1289.25
Experienced Law enforcement officers	Online training program	30	1	150/60	75	\$34.99	2624.25
New Law enforcement officers	Feedback about Training, Barriers, and Influential People	30	1	5/60	2.5	\$17.19	42.975
Experienced Law enforcement officers	Feedback about Training, Barriers, and Influential People	30	1	5/60	2.5	\$34.99	87.475
New Law enforcement officers	Changes in Behaviors after Training	30	1	2/60	1	\$17.19	17.19
Experienced	Changes in	30	1	2/60	1	\$34.99	34.99

Law enforcement officers	Behaviors after Training						
total					334		\$8714.06

A13. Estimates of Other Total Annual Cost Burden to Respondents or Record Keepers

The research team anticipates no other costs to participants or record keepers.

A14. Annualized Cost to the Government

The pilot study will take about 1 year. The pilot study will include a \$75,000 contract for external partners at Washington State University to assist with recruiting 60 law enforcement officers, meeting with each four times, and provide actigraphs for the study. Government personnel effort to carry out the pilot study will be about \$100,000. This includes 50% effort by the Project Officer (Claire Caruso) and 5% effort by one technical support staff member. Total government cost will be about \$175,000 for 1 year to collect and analyze the pilot data.

A15. Explanation for Program Changes or Adjustments

This is a new data/information collection.

A16. Plans for Tabulation and Publication and Project Time Schedule

Table A.16.1 gives the time line for the pilot study, application of the results to improve the online training, final release of the completed online training program to the public, and submitting a manuscript for publication to report results from the pilot study. As soon as OMB gives approval, the research team will begin the pilot study. Data collection should begin about July 2019 or sooner.

Research team will analyze the actigraph and Sleep Activity Diary data to compare sleep and activity patterns at three time points: before, immediately after, and 9 weeks after participants completed the training. For this, the following analytical plan will be employed. First, actigraph data will be screened for logical inconsistencies (e.g. when the watch has been taken off wrist and needs to be re-coded as sleep or wake) as well as for normality. Second, means with standard deviations for sleep variables (time to bed, sleep latency, sleep duration, time awake, sleep efficiency) will be calculated to describe sleep patterns pre-, immediately post- and 9-week post-training. The research team will graphically represent any differences in sleep across the three measurement points. Finally, the research team will use a generalized linear mixed model to examine differences between sleep variables pre-, immediately post- and 9-week post-training to determine whether the training significantly improves participant sleep. This will involve the use of multi-level modeling (MLM), a technique designed to control for multiple data points collected from the same participants over time. Age, gender, race, children, marital status, stress during work shifts, and previous experience with shift work will be included as random effects in the model to identify any significance differences in sleep pre-training, during training, and 9 weeks post-training after controlling for these covariates.

The research team will examine the survey data before taking the training, immediately after completing the training, and 9 weeks post-training. Descriptive statistics will assess demographic information, prior experience, behaviors, sleep symptoms, perceived views of significant others, and barriers to adapting the strategies in the training program. Paired T-tests will assess for significant differences for the following:

1. Changes in total number of correct answers in Knowledge Survey pre- and immediately post-training.
2. Changes in total Epworth Sleepiness Scale pre-training and 9 weeks post-training

3. Changes in total Pittsburgh Sleep Quality Index score pre-training and 9 weeks post-training.

The significant p value will be .05.

Table A.16.1

Project Time Schedule	
Activity	Time Schedule
Recruit participants	Immediately after OMB approval
Complete data collection	6 months after OMB approval
Analyze the data	9 months after OMB approval
Modify online training program in response to pilot study results	10 months after OMB approval
Submit online training for three rounds of approval which will take about 3 months each with revisions made to the training in response to each review: NIOSH internal review; external review; final NIOSH internal review	16 months after OMB approval
Release the online training to the public	18 months after OMB approval
Submit for publication selected results from the pilot study	18 months after OMB approval

A17. Reason(s) Display of OMB Expiration Date is Inappropriate

“The display of the OMB expiration date is not in appropriate.”

A18. Exceptions to Certification for Paperwork Reduction Act Submissions

There are no exceptions to the certification.

References

Bureau of Labor Statistics. 2015. National census of fatal occupational injuries in 2014.

www.bls.gov/news.release/cfoi.htm

Bureau of Labor Statistics. 2016. Injuries, Illnesses, and Fatalities | Fact Sheet | Police | August 2016.

www.bls.gov/iif/oshwc/cfoi/police-officers-2014-chart3-data.htm

Caruso CC, Bushnell T, Eggerth D, et al. 2006. Long Working Hours, Safety, and Health: Toward A National Research Agenda. *Am J Ind Med* 49(11):930-942.

Colten HR, Altevogt BM, Editors; Institute of Medicine. 2006. Sleep disorders and sleep deprivation an unmet public health problem. Washington, DC: National Academies Press.

Goel, N., Rao, H., Durmer, J. S., & Dinges, D. F. 2009. Neurocognitive Consequences of Sleep Deprivation. *Seminars in Neurology*, 29, 320-339.

Healthy People 2020 Sleep Health. 2010. Accessed January 2011.

www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=38

Lerman SE, Eskin E, Flower DJ, et al. 2012. Fatigue risk management in the workplace. *J Occup Environ Med* 54:231-58.

Ma CC, Burchfiel CM, Fekedulegn D, et al. 2011. Association of shift work with physical activity among police officers: the Buffalo Cardio-metabolic Occupational Police Stress Study. *J Occup Environ Med*. 53(9):1030-6.

McMenamin TM. 2007. A time to work: recent trends in shift work and flexible schedules. *Monthly Lab Rev*. 130 (12): 3-15.

Mukherjee S, Patel SR, Kales SN, et al. 2015. An Official American Thoracic Society Statement: The Importance of Healthy Sleep. Recommendations and Future Priorities. *Am J Respir Crit Care Med*, 191 (12):1450-8.

NIH Sleep Research Plan. 2011.

www.nhlbi.nih.gov/files/docs/resources/sleep/201101011NationalSleepDisordersResearchPlanDHHSPublication11-7820.pdf)

NIOSH, Caruso CC, Geiger-Brown J, et al. 2015. NIOSH training for nurses on shift work and long work hours. (DHHS (NIOSH) Pub No. 2015-115). Cincinnati, OH: U.S. DHHS, PHS, CDC, NIOSH.

www.cdc.gov/niosh/docs/2015-115/

Reaves, BA. 2011. Census of State and Local Law Enforcement Agencies, 2008. BJS Bulletin. U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics

www.bjs.gov/content/pub/pdf/cslea08.pdf

Rosekind MR. 2015. Awakening a nation: a call to action. *Sleep Health*, 1, 9-10.

Violanti JM, Fekedulegn D, Hartley TA, et al. 2013. Life expectancy in police officers: A comparison with the U.S. general population. *Int J Emerg Ment Health* 15(4):217-28.

Womack SD, Hook JN, Reyna SH, & Ramos M. 2012. Sleep Loss and Risk-Taking Behavior: A Review of the Literature. *Behav.Sleep Med.*

Zimmerman FH. 2014. Cardiovascular risk in law enforcement. In Violanti JM, ed. *Dying for the Job: Police Work Exposure and Health*. Springfield, IL: Charles C. Thomas Publisher LTD; pp. 41-56.