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DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Disease Control and Prevention

[60Day–24–24ER; Docket No. CDC–2024–0029]

Proposed Data Collection Submitted for Public Comment and Recommendations

AGENCY: Centers for Disease Control and Prevention (CDC), Department of Health and Human Services (HHS).

ACTION: Notice with comment period.

SUMMARY: The Centers for Disease Control and Prevention (CDC), as part of its continuing effort to reduce public burden and maximize the utility of government information, invites the general public and other Federal agencies the opportunity to comment on a proposed information collection, as required by the Paperwork Reduction Act of 1995. This notice invites comment on a proposed information collection project titled Direct Reading Methodologies, Sensors, and Robotics Technology Assessment in Lab/Simulator-based Settings. The proposed data collection will allow NIOSH to assess the safety and health considerations of these rapidly changing direct reading methods, sensor, and robotics technologies.

DATES: CDC must receive written comments on or before June 24, 2024.

ADDRESSES: You may submit comments, identified by Docket No. CDC–2024–0029 by either of the following methods:

- *Federal eRulemaking Portal: www.regulations.gov.* Follow the instructions for submitting comments.
- *Mail:* Jeffrey M. Zirger, Information Collection Review Office, Centers for Disease Control and Prevention, 1600 Clifton Road NE, MS H21–8, Atlanta, Georgia 30329.

Instructions: All submissions received must include the agency name and Docket Number. CDC will post, without change, all relevant comments to *www.regulations.gov.*

Please note: Submit all comments through the Federal eRulemaking portal (*www.regulations.gov*) or by U.S. mail to the address listed above.

FOR FURTHER INFORMATION CONTACT: To request more information on the proposed project or to obtain a copy of the information collection plan and instruments, contact Jeffrey M. Zirger, Information Collection Review Office, Centers for Disease Control and Prevention, 1600 Clifton Road NE, MS H21–8, Atlanta, Georgia 30329; Telephone: 404–639–7570; Email: *omb@cdc.gov.*

SUPPLEMENTARY INFORMATION: Under the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501–3520), Federal agencies must obtain approval from the Office of Management and Budget (OMB) for each collection of information they conduct or sponsor. In addition, the PRA also requires Federal agencies to provide a 60-day notice in the **Federal Register** concerning each proposed collection of information, including each new proposed collection, each proposed extension of existing collection of information, and each reinstatement of previously approved information collection before submitting the collection to the OMB for approval. To comply with this requirement, we are publishing this notice of a proposed data collection as described below.

The OMB is particularly interested in comments that will help:

1. Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;
2. Evaluate the accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;
3. Enhance the quality, utility, and clarity of the information to be collected;
4. Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, *e.g.,* permitting electronic submissions of responses; and
5. Assess information collection costs.

Proposed Project

Direct Reading, Sensor, and Robotics Technology Assessment in Lab/Simulator-based Settings—New—National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC).

Background and Brief Description

The Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH), is requesting approval of a new Generic information collection for a period of three years under the project titled, Direct Reading Methodologies, Sensor Technologies, and Robotics Technology Assessment in Lab/Simulator-based Settings. NIOSH is a Federal institute that operates within the CDC specifically dedicated to generating new knowledge in the field of occupational safety and health and responsible for transferring that knowledge into practice for the betterment of workers. Given NIOSH's mission to develop new knowledge, the Institute is uniquely positioned to evaluate potential benefits and risks relative to occupational safety and health issues of the 21st century workplace, work, and workforce—also discussed as the Future of Work (FOW). Areas requiring detailed attention and advancement include research and development in artificial intelligence, robotics, and sensor technologies. NIOSH has established alliances and partnerships with other Federal agencies and external partners to collaborate and share technical knowledge to improve awareness around workplace hazards and appropriate safeguards as it relates to technology. Consequently, NIOSH created two Centers charged with leading and coordinating these FOW efforts, with a focus on technology assessment and integration in the workplace that revolves around emerging recommendations and standards in advancing automation.

First, in 2014, the NIOSH Center for Direct Reading and Sensor Technologies (CDRST) was established to research and develop recommendations on the use of 21st century technologies in occupational safety and health. Both direct-reading methodologies and sensors are used to detect and monitor hazardous conditions, to assess and document intervention strategies, and especially to immediately trigger alarms in the event of unsafe conditions. Examples of direct reading and sensor technologies include real-time personal monitoring, wearable monitors, and exoskeletons including wearable robots.

Second, in 2017, NIOSH established the Center for Occupational Robotics Research (CORR) to study the nature of robots in the workplace, conduct workplace interventions to prevent robot-related worker injuries, and develop guidance for safe interactions between humans and robots. There are several common types of robots used in occupational environments—traditional industrial robots; professional or service robots; collaborative robots; and mobile

robots (*e.g.,* drones and powered exoskeletons). In most cases, NIOSH laboratories including virtual reality (VR) facilities, are used to conduct this research in a safe and controlled environment. Within these studies, human factors, safety engineering, and test strategies are utilized to provide feedback about the utility of various robotics technology in the workplace to inform design, as well as possible standards.

Direct reading methodologies, sensor technologies, and robotics technology play important roles in advancing automation to keep many workers within various industries safe while performing their professional duties but rapidly evolve and change in scope and use. NIOSH requests a Generic information collection package for assessing the safety and health considerations of these rapidly changing direct reading methods, sensor, and robotics technologies.

Different types of data will be collected around these technologies including: (1) body function assessments to identify the validity and reliability of direct reading, sensor, and robotic technologies; (2) physiological assessments to identify the impact of direct reading, sensor, and robotic technologies on worker outputs; (3) perceived knowledge, attitudes, skills, and other personal attributes to assess risks associated with the use and integration of direct reading, sensor, and robotics technologies among workers; and (4) barriers that workers face while using or interacting with direct reading methodologies, sensor technologies, and robotic technologies to prevent unintended safety and health consequences—including adoption and maintenance challenges. Collectively, this information will be used to inform research, development, and integration recommendations to advance the nation's FOW needs. These data collection efforts will most often occur in controlled laboratory space, including virtual reality space that simulates these technologies. In some cases (*e.g.,* survey or follow-up interview administration) data collection may occur electronically.

Respondents are expected to be reflective of the full spectrum of the U.S. workforce and from industries that rely heavily on direct reading methodologies, sensor technologies, and robotics technologies to protect workers (*e.g.,* public safety and emergency response, manufacturing, retail and trade, construction, mining, and oil and gas). Expected respondents include any worker who has experience with, is required to use, or willing to use and provide feedback on any sort of direct reading method, sensor, or robotics technology in the workplace—these could be wearable or non-wearable. Common job roles that wear or interact with such technology include construction workers, manufacturing workers, oil gas and extraction workers, mineworkers, retail workers, maintenance workers, manufacturing workers, fire chiefs/firefighters, law enforcement officers, and any industrial hygiene or occupational safety and health professional who oversees the integration and use of new technologies in the workplace. Recruitment for laboratory studies includes individuals from the general working population that represent high-hazard industries (*e.g.,* construction, manufacturing). These individuals are also all adults between the ages of 18 and 65 years.

CDC requests OMB approval for an estimated 205,002 total burden hours with an estimated annual burden of 68,334 hours. There is no cost to respondents other than their time to participate.

ESTIMATED ANNUALIZED BURDEN HOURS

Type of respondents	Form name	Number of respondents	Number of responses per respondent	Average burden per response (in hours)	Total burden (in hours)
Members of the general public who represent a variety of industrial sectors [1].	Informed Consent	4,000	1	5/60	334
	Pre-Screening Health Questionnaire: Standardized form with decision logic allowing some questions to be omitted.	4,000	2	15/60	2,000
	Demographics Questionnaire: Standardized form with decision logic allowing some questions to be omitted.	4,000	1	15/60	1,000
	Job Survey: Occupational tasks, postures used, duration of exposure, etc.	4,000	1	15/60	1,000
	Pre- and Post-Assessments: Determine changes in knowledge, skills, and abilities as it related to efficacy, confidence, and perceived competence in technology assessment/intervention (this could be strictly quantitative or semi-structured).	4,000	2	15/60	2,000
	Anthropometric Measurements: Calipers/digital measuring of facial and body dimensions with and without gear (*e.g.,* chest depth; foot breadth with and without proper personal protective equipment) to assess functional integration of wearables and other sensors.	4,000	12	5/60	4,000

ESTIMATED ANNUALIZED BURDEN HOURS—Continued

Type of respondents	Form name	Number of respondents	Number of responses per respondent	Average burden per response (in hours)	Total burden (in hours)
	Physiological Measurements: Measurements recorded using chest worn heart rate monitor strap, blood pressure cuff/strap, COSMED Kb5 or similar, SQ2020–1F8 temperature logger, TOSCA 500 pulse oximeter, Koken breathing waveform recording mask, MOXY muscle oxygenation strap sensor, neurophysiological measures including Electroencephalography (EEG), and Functional near-infrared spectroscopy (fNIRS), etc.	4,000	4	60/60	16,000
	Perceived Rate of Exertion: using validated perceived exertion scales (*e.g.,* Borg Ratings).	3,000	12	5/60	3,000
	Body Function Assessments: Measurements taken (e.g., on the low back, neck, shoulder, arm, etc.) to conduct strength testing, range of motion testing, reference or maximum voluntary exertions, endurance testing with different direct reading, wearable sensor, and robotics technologies.	3,000	6	30/60	9,000
	Motion Measurement Cameras: Camera with motion amplification technology (*e.g.,* Iris M, Moasure One, etc.) that can measure deflection, displacement, movement, and vibration not visible to the human eye using biomechanical markers for motion capture.	2,000	12	15/60	6,000
	Perceived Usability Assessments: Close- and open-ended questions to determine system usability including usability scales, mental workload, body part discomfort, and contact stress experiences of new direct reading, sensor, and robotics technologies (lab- and virtual reality-based).	4,000	6	10/60	4,000
	Self-Perception Surveys and other Structured Questions: Perceived comfort level with technology, perceived safety and trust level with technology, perceived fatigue while interacting with technology, etc.	4,000	6	10/60	4,000
	Biomechanics measurements: Force plate, strain gauges, stopwatch, accelerometers (including dataloggers), electromyography sensors human/equipment interaction forces, whole-body motion, Electromyography (EMG) for muscle activity, Near-infrared spectroscopy (NIRS) for muscle oxygenation, etc.	2,000	4	30/60	4,000
	Task Performance Measures: Measures recorded using various virtual reality systems (*e.g.,* Vive, Meta quest) and components (*e.g.,* controllers) that quantify the subjects' performance such as time to complete, errors, movement path, and omissions.	2,000	12	15/60	6,000
	Eye Tracking Measures: Recorded using various virtual reality glasses (*e.g.,* Ergoneers) to assess eyes-off-task time and recognition in response to simulated environments designed to assess integration of new robotic technologies and design set-up.	2,000	12	15/60	6,000
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