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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 bio-mechanical 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
	68,334

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