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DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Centers for Disease Control and Prevention

[60Day-12-12RS]

Proposed Data Collections Submitted for  
Public Comment and Recommendations

In compliance with the requirement of Section 3506(c)(2)(A) of the Paperwork Reduction Act of 1995 for opportunity for public comment on proposed data collection projects, the Centers for Disease Control and Prevention (CDC) will publish periodic summaries of proposed projects. To request more information on the proposed projects or to obtain a copy of the data collection plans and instruments, call 404-639-7570 or send comments to Kimberly S. Lane, at 1600 Clifton Road, MS-D74, Atlanta, GA 30333 or send an email to [omb@cdc.gov](mailto:omb@cdc.gov).

Comments are invited on: (a) Whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility; (b) the accuracy of the agency's estimate of the burden of the proposed collection of information; (c) ways to enhance the quality, utility, and clarity of the information to be collected; and (d)

ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology. Written comments should be received within 60 days of this notice.

### **Proposed Project**

Exposure Assessment and Epidemiological Study of U.S. Workers Exposed to Carbon Nanotubes and Carbon Nanofibers - New - National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC).

### Background and Brief Description

The mission of the National Institute for Occupational Safety and Health (NIOSH) is to promote safety and health at work for all people through research and prevention. The Occupational Safety and Health Act of 1970, Public Law 91-596 (Section 20[a][1] authorizes NIOSH to conduct research to advance the health and safety of workers. In this capacity, NIOSH will conduct an exposure assessment and epidemiological study of U.S. carbon nanotube (CNT) and carbon nanofiber (CNF) workers.

At present, because of the newness of the technology, much of the occupational exposure to engineered nanomaterials occurs at the research and development (R&D) or pilot scale. There

have been few reliable surveys of the size of the workforce exposed to nanomaterials. Health effects from exposure to nanomaterials are uncertain, but may be more severe than from larger-sized particles of the same material. This is due to the small size, high surface area per unit mass (i.e., specific surface area) or (in some cases) high aspect ratio of nanomaterials. Carbon nanotubes and nanofibers are among the nanomaterials of greatest interest from a public health perspective because of their potentially asbestiform properties (e.g., high aspect ratio) and toxicological evidence of possible fibrogenic, inflammatory, and clastogenic damage resulting from exposures at occupationally relevant levels. In addition, the useful properties of CNT and CNF have rendered them among the first nanomaterials to be commercially exploited in manufacturing settings. Thus, an epidemiologic study to determine whether early or late health effects occur from occupational exposure to CNT and CNF is warranted.

The proposed research is a cross-sectional study of the small current U.S. workforce involved with CNT and CNF in manufacturing and distribution, to be conducted in the following phases: 1) Industrywide exposure assessment study to evaluate worker exposure and further develop and refine measurement methods for CNT and CNF. This component will refine sampling and analysis protocols previously developed for the detection

and quantification of CNT and CNF in US workplaces. 2) A cross-sectional study relating the best metrics of CNT and CNF exposure to markers of early pulmonary or cardiovascular health effects. After the sampling and analysis protocols have been established to measure CNT and CNF, an industrywide study of the association between exposure and health effects will be conducted. Medical examinations will be conducted and several biomarkers of early effect (for pulmonary fibrosis, cardiovascular disease, and genetic damage) will be measured in blood and sputum for workers exposed to a range of CNT and CNF levels.

The study will include a questionnaire with a three-fold purpose: (1) to determine whether study participants have any contraindications for certain medical procedures to be conducted (spirometry and sputum induction), (2) to assist in interpretation of the biomarker results, and (3) to inquire about current and past exposure to CNT, CNF, and other chemicals, dusts, and fumes. The questionnaire will be given by NIOSH personnel as a computer-assisted personal interview (CAPI). After administration of the CAPI, medical examinations will be conducted to evaluate pulmonary function (via spirometry) and blood pressure, and sputum and blood will be collected. Statistical analyses will be conducted to determine the nature of the relation between exposure to CNT and CNF and

these biomarkers of early effect, considering potential confounding factors such as smoking, age, gender, and workplace co-exposures, including non-engineered ultrafine particles.

The proposed project supports the NIOSH legislatively mandated industrywide studies program that conducts epidemiological and exposure assessment research studies to identify the occupational causes of disease in the working population and their offspring and to effectively communicate study results to workers, scientists, industry, and the public.

The questionnaire will be administered one time only, at the worksite, to 100 workers involved in the production and use of CNT or CNT. The study will be carried out during the participants' regular work shift. There is no cost to respondents or their employers other than their time. We estimate that the average burden per response to be 22 minutes, and that the total burden to all respondents will be 37 hours (see table below).

Estimated Annualized Burden Hours

Respondents	No. of Respondents	No. of Responses per Respondent	Average Burden per Response (in hours)	Total Burden (in hours)
Nanomaterials Workers	100	1	22/60	37
Total				37

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