

To: Directors of Prefectural Labour Bureau

From: Director of Labour Standards Bureau,
Ministry of Health, Labour and Welfare

Notification on present preventive measures for the prevention of exposure at workplaces manufacturing and handling nanomaterials.

Research and development of nano materials are advancing in these years, and their use as industrial materials is expanding. As the use of nano materials expands, workers engaged in their manufacturing and handling are expected to increase rapidly.

Due to much smaller compositional unit of nano materials, they sometimes indicate properties different from that at their original state. Some scientific papers report that nano materials affected mice and other animals under specified conditions, while others report that no significant influences were observed. In this context, research institutions in Japan and other countries, as well as OECD and other international institutions, are promoting studies on how nano materials affect health, including animal experiments.

Further scientific findings must be collected as to their impact on human health. At present, the National Institute of Occupational Safety and Health, Japan (JNIOOSH), is promoting research on preventive measures against exposure to nano materials. The JNIOOSH also plans to start shortly the examination of required safety measures, through expert meetings in cooperation with the Pharmaceutical and Food Safety Bureau, Ministry of Health, Labour and Welfare. From a precautionous point of view, the JNIOOSH summarized interim preventive measures against exposure to nano materials as follows, and, in a separate attachment, requested related organizations to implement the measures. Please promote the identification of nano materials manufacturing and/or handling sites, and the dissemination of this notice throughout such sites.

1 Scope of nano materials

The scope of nano materials herein include materials in a solid state, which are manufactured using elements or other raw materials, and which are either nano-objects, or nanostructured materials (including objects that have nano-scale structures inside, as well as aggregations of nano-objects), with at least one of the three dimensions smaller than 100 nanometers.

2 Scope of workers

The scope of workers include workers (including supervisors) who are engaged in the manufacturing and/or handling (including repairs, inspections etc., as well as manufacturing and/or handling for scientific purposes) of materials as specified in 1.

3 Preventive measures against exposure

(1) Manufacturing equipment

In principle, manufacturing devices shall have a sealed structure. If it is difficult, install a local exhaust system. The outlet of a local exhaust system to outside must be attached with a high performance filter, and installed local exhaust systems shall be maintained and inspected periodically.

(2) Handling of nano materials in other work processes

The following preventive measures against exposure shall be applied to all the activities that involve direct handling of nano materials by workers, which were not mentioned in (1), such as accepting deliveries of raw materials; measuring raw materials and products; feeding manufacturing and/or processing devices; unloading manufacturing and/or processing devices; repackaging; cleaning, inspections and repairs of manufacturing and/or processing devices; and cleaning of containers.

- a It is desirable to prevent the exposure of workers to nano materials through sealing, unmanning and/or automation. If such measures are difficult, install a local exhaust system. The outlet of a local exhaust system to outside must be attached with a high performance filter.
- b Installed local exhaust systems shall be maintained and inspected periodically.
- c Workers who handle nano materials directly shall put on adequate personal protective equipment and work wear.
(See [4] Personal protective equipment.)

(3) Work management etc.

- a Work rules shall be established concerning the handling of nano materials, to prevent the exposure of workers to nano materials.
- b Work site floor and work tables shall be vacuumed with a vacuum cleaner attached with a high performance filter, and/or wiped with a wet cloth, so that nano materials will not spread. Used cloths shall be sealed in a bag and disposed of adequately.
- c Provide workers with training on the properties of nano materials and preventive measures against exposure.
- d Segregate facilities that manufacture, process and/or handle nano materials from other areas, and install in between a decontamination station or other adequate systems to prevent the transfer of nano materials attached to workers.
- e Restrict entries into facilities that manufacture, process and/or handle nano materials, to necessary personnel.

(4) Personal protective equipment

- a Stock a required quantity of adequate respiratory protective equipment that prevents the inhalation of nano materials, and retain them in an effective and clean status. It is desirable to use respiratory protective equipment that has passed the national test based on the dust mask standards specified by Notification No.19, Ministry of Labour, 1988, and has the minimum particle collection efficiency of 99.9%, or equipment that has the equivalent or higher performance.
- b Use protective gloves made of adequate materials, which prevent the attachment of nano materials to the skin. It is desirable to use disposable protective gloves, to ensure an effective and clean status. Used protective gloves shall be sealed in a bag and disposed of adequately.
- c Stock a required quantity of protective goggles, and retain them in an effective and clean status.
- d To prevent exposure to nano materials from work wear, workers who handle nano materials shall put on special protective wear. It is desirable to use protective wear made of nonwoven fabric, and the wear must be retained in an effective and clean status. Protective wear to which nano materials have attached shall not be taken out of the relevant work site.

4 Collection of other related information

The National Institute of Occupational Safety and Health, Japan, plans to open a special page on its website to provide related information, such as its scientific achievements and guidelines established by research institutions in other countries.