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CITY OF BERKELEY

Community Environmental Advisory Commission/Office of the City Manager

ACTION CALENDAR
December 5, 2006

To: Honorable Mayor and
Members of the City Council
From: Community Environmental Advisory Commission (CEAC)
Submitted by: Nabil A Al-Hadithy, Secretary, CEAC
Subject: Manufactured Nanoparticle Health and Safety Disclosure

RECOMMENDATION

Adopt first reading of an Ordinance amending Sections 15.12.040 and 15.12.050 of the Berkeley Municipal Code to add a health and safety disclosure for nanoparticles.

Send a letter to elected officials asking them to include a percentage of all federal funds to the National Nanoparticle Initiative be earmarked for health and safety research.

FISCAL IMPACTS OF RECOMMENDATION

No impact. Any workload impacts will be absorbed by existing staff resources.

CURRENT SITUATION AND ITS EFFECTS

Title 15 of the Berkeley Municipal Code, Hazardous Materials and Waste Management, requires the filing of disclosure information for hazardous materials when certain quantities are exceeded. After considerable input and research, the Community Environmental Advisory Commission (CEAC) and the Hazardous Materials Manager have concluded that reporting of nanoparticles, which can be inhaled or absorbed through the skin, is essential. The proposed amendment to Title 15 requires all businesses that manufacture or use nanoparticles to submit a written report of the current toxicology of the nanomaterials reported, and methods for safe handling, monitoring, containing, disposing, and tracking the inventory, thus assisting with prevention and mitigation of releases.

BACKGROUND

Nanoparticles are materials, one of whose axes is equal to or less than 100 nanometers in size (a nanometer is one trillionth-billionth of a meter). Nanotechnology is the understanding and control of nanoparticles whose unique physical and chemical characteristics enable novel applications. Nanotechnology has uses in health, technology, and military applications. The proposed ordinance only addresses nanoparticles that are engineered materials created for a specific purpose.

Nanoparticles are distinct from nanostructures, such as etchings on silicon chips. Nanoparticles can be found as particulate solids, in liquids and aerosols, and can be dispersed to the environment. At present, there is limited understanding of the potential hazards of nanoparticle releases.

Nanoparticles physically act much like a gas. They can directly penetrate skin and lung tissue, and can be transported inside of cell membranes. Once inside the cell there is a possibility of potentially toxic reactions occurring on the surface of the particles. The particles are also sufficiently small so that they may bind to active sites within the cell, and thus block or interfere with essential reactions. In short, if a compound is relatively insoluble its biological activity in a nanoparticle form cannot be simply inferred from its biological activity in a bulk form.

The human health impacts of nanoparticles are very complex and are only beginning to be understood. Some nanoparticles are known to be toxic. Community Right to Know is a federal program that requires businesses to list chemicals they use. The State of California has a more stringent program and the City Of Berkeley is stricter still. The Toxics Management Division is the City's Certified Unified Program Agency (CUPA) and the CUPA codes allow a broad interpretation of a hazardous material. Specifically "hazardous material" means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.

Questions were brought up about the need to implement a safe handling of nanoparticles reporting during the design environmental review phase of the molecular foundries foundry at UC and Lawrence Berkeley Lab. Both UC and Lawrence Berkeley Lab institutions, when questioned by the Toxics Management Division, noted that information on properly managing they had no special knowledge or tools to manage nanoparticles is still at an early stage. After much consideration and input from staff, the Lawrence Berkeley Lab, the United States Environmental Protection Agency and the Woodrow Wilson Institute, the recommended self-reporting was considered to be a minimum regulation for nanotechnology facilities.

The impact to the regulated community will be minimal from research facilities, but the proposed safety measures may protect the business from potential health and safety liabilities. There is no cost to the City because the CUPA program reclaims all costs from industry. The cost to industry is minimal unless it is shown that the nanoparticles in use are potentially harmful, in which case, monitoring and abatement equipment may be costly, but necessary. It is anticipated that in many cases, the user will not find sufficient information to determine the health impacts of a material. In such cases, it is hoped that a precautionary approach be used when handling the materials.

The CEAC is particularly interested in adding a code section that names nanoparticles. The European Union, the Royal Society of the UK, the NIOSH and others have all recommended that health and safety regulations be adopted, but none have been adopted.

On September 7, 2006, the CEAC took the following action: Action: Motion, seconded, passed (Kibbey/Moret. For: unanimous, Against: None. Absent: Hale and MacKusick): That Council

instruct the Toxics Management Division to add a disclosure for nanoparticles, similar to information required for all other chemicals in BMC Chapter 15 and also in California Health and Safety Code, Division 20, Chapter 6.95; and that this disclosure should, in addition, require a written disclosure of current toxicology of the materials reported, and how the facility will safely handle, monitor, contain, dispose, track inventory, prevent releases and mitigate such materials.

At the same meeting, the CEAC took the following action: motion, seconded, passed (Kibbey/Moret. For: unanimous, Against: None. Absent: Hale and MacKusick.): Recommend that Council require a letter be sent to Diane Feinstein, Barbara Boxer, Barbara Lee and Nancy Pelosi requesting them to work with colleagues to allocate a percentage of the funds to the National Nanotechnology Initiative in the 2008 budget to be allocated for nanomaterials Health & Safety research; Vice Chair Harris to work with Secretary on letter and it should be sent to CEAC prior to going to Council.

RATIONALE FOR RECOMMENDATION

Nanoparticles behave differently to macro-particle compounds and should be handled and mitigated differently. Handlers may not know much about the materials they are handling, as new information is published, the handlers should keep updating their knowledge, since government is not doing a good job regulating these materials.

ALTERNATIVE ACTIONS CONSIDERED

No action was considered but clearly no action has potentially unacceptable consequences for nanoparticle workers and the community.

CITY MANAGER

The City Manager concurs with the content and recommendations of the Commission's Report.

CONTACT PERSON

Nabil A Al-Hadithy, Secretary, Community Environmental Advisory Commission , 981-7400

Attachments:

1: Ordinance

ORDINANCE NO. -N.S.

AMENDING BERKELEY MUNICIPAL CODE (BMC) SECTION 15.12.040 TO ADD SUBSECTION I AND AMENDING BMC SECTION 15.12.050 TO ADD SUBSECTION C.7, REGARDING MANUFACTURED NANOPARTICLE HEALTH AND SAFETY DISCLOSURE

BE IT ORDAINED by the Council of the City of Berkeley as follows:

Section 1. That Berkeley Municipal Code Section 15.12.040 is amended to add Subsection I to read as follows:

15.12.040 Filing of disclosure information.

I. All facilities that manufacture or use manufactured nanoparticles shall submit a separate written disclosure of the current toxicology of the materials reported, to the extent known, and how the facility will safely handle, monitor, contain, dispose, track inventory, prevent releases and mitigate such materials.

Section 2. That Berkeley Municipal Code Section 15.12.050 is amended to add Subsection C.7 to read as follows:

15.12.050 Quantities requiring disclosure.

C. The following disclosure requirements shall apply in addition to those in subsections A and B of this section:

7. All manufactured nanoparticles, defined as a particle with one axis less than 100 nanometers in length, shall be reported in the disclosure plan.

Section 3. Copies of this Ordinance shall be posted for two days prior to adoption in the display case located near the walkway in front of Old City Hall, 2134 Martin Luther King Jr. Way. Within 15 days of adoption, copies of this Ordinance shall be filed at each branch of the Berkeley Public Library and the title shall be published in a newspaper of general circulation.

December 5, 2006

To: Honorable Mayor and Members of the City Council
From: Chair, Community Environmental Advisory Commission (CEAC)
Subject: Nanoparticle review

RECOMMENDATION

CEAC to continue to review nanotechnology field to keep current on the definition of what constitutes a nanoparticle, and what constitutes appropriate regulation of their production and use.

CURRENT SITUATION AND ITS EFFECTS

Although nanoparticles are commonly thought of as particles that have at least one dimension of 100 nm or less, there is no formally agreed upon definition. The effects that make nanoparticles a concern for health and safety reasons may occur at smaller or larger sizes. As people continue to gain experience with nanoparticles we should be able to get better information on what constitutes a potential hazard, and what type of regulations are needed, and are most effective.