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January 24, 2012

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**BY FEDEX**

TSCA Confidential Business Information Center  
Mail Code 7407M  
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Attn: Section 8(e)  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460-0001



Re: Multi-Walled Carbon Nanotube



Dear 8(e) Coordinator:

On behalf of our client Showa Denko Carbon, Inc. and Showa Denko America Inc. ("SDK"), we are notifying the U.S. Environmental Protection Agency ("EPA") under Section 8(e) of the Toxic Substances Control Act ("TSCA") of results from a recently completed toxicity test conducted in rats exposed to a multi-walled carbon nanotube substance. This substance, which has been reviewed by EPA under the TSCA new chemical program as P08-734, is not currently being sold or distributed in commerce.

Under the study protocol, male and female Wistar rats were exposed to the carbon nanotube by inhalation over a 90-day period. Four groups were exposed to the test substance at gravimetrically determined concentrations of 0 (control), 0.013, 0.055 and 0.53 milligrams per cubic meter ("mg/m<sup>3</sup>"). The control and high-exposure groups consisted of 30 animals of each sex, half of which were sacrificed at the end of the 90-day exposure period while the remaining animals were maintained for observation for an additional 90-day recovery period. The low-exposure and medium-exposure groups each consisted of 15 animals of each sex.

At the high-exposure level of 0.53 mg/m<sup>3</sup>, the absolute lung weights, the lung-to-body weights and lung-to-brain weights were statistically significantly increased compared to control animals. After the recovery period, this weight differential declined but remained statistically significant. In addition, granuloma-like lesions in the bronchiolar/alveolar region of the lungs were found in the high-dose group, in both sexes, compared to control animals. The incidence and severity of this

**CONTAINS NO CBI**

effect was unchanged in the high-dose recovery group. This effect was also observed in the medium-dose group of 0.055 mg/m<sup>3</sup> in two females at the end of the dosing period.

The results of bronchoalveolar lavage ("BAL") analysis in the high-dose group indicated statistically significant increases of macrophages, lymphocytes and neutrophils as well as elevated levels of alkaline phosphatase, lactate dehydrogenase and gamma-glutamyltransferase in both sexes compared to the control group. At the end of the recovery period, the elevated levels of lymphocytes, neutrophils, lactate dehydrogenase, alkaline phosphatase and gamma-glutamyltransferase remained statistically significant compared to control animals. In the medium-dose group, the BAL analysis indicated statistically significant increases of alkaline phosphatase in both sexes and of lactate dehydrogenase in males compared to controls.

In addition, microscopic analysis of the nasal cavity of the high-dose group indicated an increased incidence and severity of eosinophilic inclusions in the respiratory and/or olfactory epithelium and an increased incidence of goblet cell proliferation/hypertrophy in both sexes. During the recovery period, the goblet cell proliferation/hypertrophy decreased, but there was an increase in severity of the eosinophilic inclusions in the recovery animals. In addition, there was evidence of degeneration and regeneration of the olfactory epithelium during the recovery period for the high-dose group.

SDK has determined that the results of this study are reportable under EPA's criteria for TSCA Section 8(e).

Respectfully submitted,



Mark A. Greenwood

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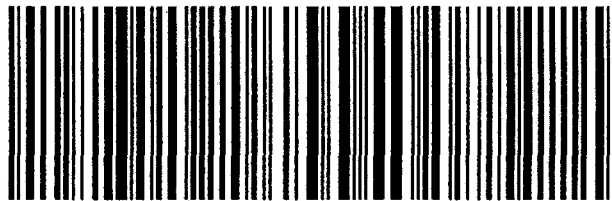
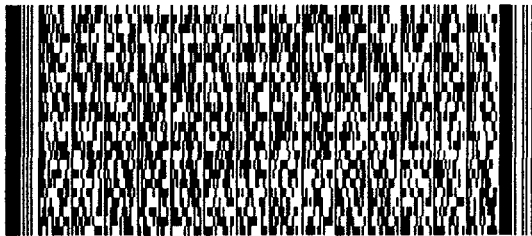
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