

Epoxy Resins and Carbon Nanotubes

Helping Business with Risk, Regulation and Responsibility



Background

SAFENANO has contributed to a lifecycle analysis study of CNT-containing epoxy resins, to identify critical stages where there may be potential for the release of CNTs, and to give a qualitative assessment on the subsequent exposure inhalation risk posed.

The lifecycle study has identified the following groups that could be at risk exposure inhalation to CNTs:

- production personnel involved with powder handling and processing of CNTs, including maintenance and cleaning;
- personnel involved with machining / fabrication of hardened composites;
- personnel working at recycling facilities.

Risk, Regulation & Responsibility

The use of carbon nanotubes (CNTs) will continue to grow in the polymer composite sector as manufacturers continue to seek to exploit the enhanced mechanical,

electrical and thermal properties that these nanomaterials impart.

A clear barrier to growth is the significant risk presented to business from:

- uncertainty that remains regarding the potential toxicity of these innovative raw materials.
- uncertainty regarding current regulation on nanomaterials coupled with the problem that many CNTs are supplied with MSDS data corresponding to graphite.
- results from recent studies which have indicated that some CNTs may manifest asbestos-like pathogenic effects through inhalation exposure.

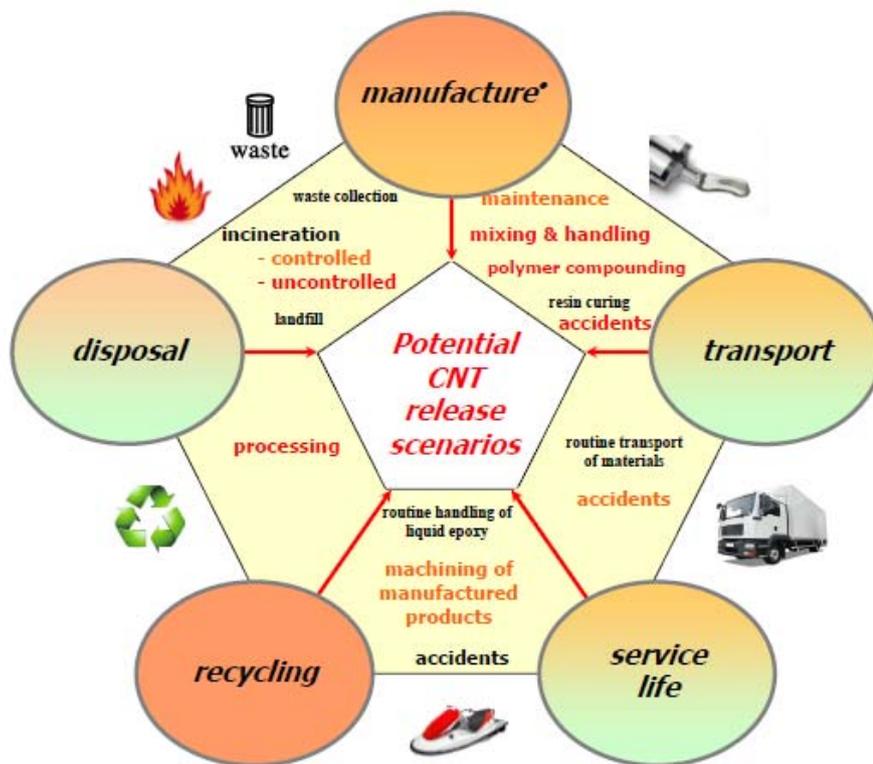
Regulators in the United States and Europe continue to introduce further measures to regulate CNTs. Manufacturers and importers must therefore exercise appropriate duty of care measures and prepare for further regulatory compliance.

Who can help?

SAFENANO is a recognised leader in the characterisation, exposure assessment and toxicology of particles. We can help you identify, understand and address the potential risks from manufactured nanomaterials to your employees, your customers and the environment. Using a best practice approach SAFENANO can provide you with a basis for responsible stewardship to help meet your duty of care responsibilities.

The lifecycle analysis below provides information to help identify potential for inhalation exposure to carbon nanotubes used in epoxy resins, allowing you to evaluate the potential risks to your business.





OUR COMPANY

The Institute of Occupational Medicine (IOM) is one of the leading providers of workplace health research, consulting and services. Our expertise extends across a very wide range of disciplines.

Established in 1969 in the UK as an independent charity, we have our origins in the research sector where we continue to have an international reputation for pioneering workplace health projects.

IOM employs around 140 staff who help deliver safer working environments and healthier working lives for thousands of employees around the world, across every possible industry and service sector.

From our UK base and headquarters in Scotland, we have 4 regional offices (Edinburgh, London, Stafford and Chesterfield) which serve our UK, European and North American clients. We established our Asian base with IOM Singapore in 2012.

In our research work, IOM has a high global standing through its published research and also the service work it undertakes for leading organisations.

In our consulting and services work, we have a reputation for high quality, authoritative and independent measurement, surveys and reporting, which we undertake for hundreds of clients – large and small – each year.

Today, IOM is one of a select few internationally recognised authorities on workplace health. Our work is accepted across all stakeholder groups, from management to employee representatives as well as regulatory agencies and governments around the world.

Analysis of the manufacturing stage assumes that the carbon nanotube material has been manufactured and supplied by a third party as a raw material i.e. the potential exposure inhalation risk resulting from the primary manufacture of carbon nanotubes has not been considered in the above LCA. However, detailed information on the commercial scale production of CNTs and associated release scenarios and exposure inhalation risks are documented in the full report.

The full report "NANOLIFECYCLE – A Lifecycle Assessment Study of the Route and Extent of Human Exposure via Inhalation for Commercially Available Products and Applications Containing Carbon Nanotubes" is available on the SAFENANO website, www.safenano.org

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