Radiation Protection Using Carbon Nanotube Derivatives

This technology can be used in clinical oncology and in nuclear disaster response.

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BHA and BHT are well-known food preservatives that are excellent radical scavengers. These compounds, attached to single-walled carbon nanotubes (SWNTs), could serve as excellent radical traps. The amino-BHT groups can be associated with SWNTs that have carboxylic acid groups via acid-base association or via covalent association.

The material can be used as a means of radiation protection or cellular stress mitigation via a sequence of quenching radical species using nano-engineered scaffolds of SWNTs and their derivatives. It works by reducing the number of free radicals within or nearby a cell, tissue, organ, or living organism. This reduces the risk of damage to DNA and other cellular components that can lead to chronic and/or acute pathologies, including (but not limited to) can-