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**Multiple roles of oxidants in the pathogenesis of asbestos-induced diseases<sup>\*1</sup>**

 Arti Shukla<sup>\*</sup>, Mary Gulumian<sup>†,‡</sup>, Tom K. Hei<sup>§</sup>, David Kamp<sup>¶</sup>, Qamar Rahman<sup>||</sup> and Brooke T. Mossman<sup>¶,✉,\*</sup>
<sup>\*</sup> Department of Pathology, University of Vermont College of Medicine, Burlington, VT, USA

<sup>†</sup> National Center for Occupational Health, Johannesburg, South Africa

<sup>‡</sup> Department of Hematology and Molecular Medicine, Medical School, University of Witwatersrand, Johannesburg, South Africa

<sup>§</sup> Center for Radiological Research, Columbia University, New York, NY, USA

<sup>¶</sup> Department of Medicine, Northwestern University Medical School, Evanston, IL, USA

<sup>||</sup> Human Risk Assessment and Inhalation Toxicology, Industrial Toxicology Research Center, Lucknow, India

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**Abstract**

Exposure to asbestos causes cellular damage, leading to asbestosis, bronchogenic carcinoma, and mesothelioma in humans. The pathogenesis of asbestos-related diseases is complicated and still poorly understood. Studies on animal models and cell cultures have indicated that asbestos fibers generate reactive oxygen and nitrogen species (ROS/RNS) and cause oxidation and/or nitrosylation of proteins and DNA. The ionic state of iron and its ability to be mobilized determine the

oxidant-inducing potential of pathogenic iron-containing asbestos types. In addition to their capacity to damage macromolecules, oxidants play important roles in the initiation of numerous signal transduction pathways that are linked to apoptosis, inflammation, and proliferation. There is strong evidence supporting the premise that oxidants contribute to asbestos-induced lung injury; thus, strategies for reducing oxidant stress to pulmonary cells may attenuate the deleterious effects of asbestos.

**Author Keywords:** Asbestos fibers; Cell injury; Mesothelioma; ROS; RNS; Fibrosis; Lung cancers; Free radicals



Corresponding author. Address correspondence to: Dr. Brooke T. Mossman, University of Vermont College of Medicine, Department of Pathology, 89 Beaumont Avenue, , Burlington, VT 05405, , USA; Tel: (802) 656-0382; Fax: (802) 656-8892

\*1 Guest Editor: Brooke T. Mossman

This article is part of a series of reviews on "Role of Reactive Oxygen and Nitrogen Species (ROS/RNS) in Lung Injury and Diseases." The full list of papers may be found on the homepage of the journal.

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