277 ACUTE PHASE PULMONARY RESPONSE TO SILICA IN RATS. M DiMatteo, J M Antonini, K Van Dyke and M J Reasor. Department of Pharmacology and Toxicology, West Virginia University, Morgantown, WV.

Silica has been shown to cause inflammation and damage to lung tissue. Study objectives were to determine the minimum time after silica exposure that the inflammatory/damage response was detectable and the temporal relationship of these processes. Male Fischer 344 rats were dosed intratracheally with silica [2.5mg (low) or 10mg (high) /100g body weight] or saline vehicle. At 2 and 4 hrs. post-exposure, both cellular and biochemical parameters of inflammation/damage were evaluated *via* bronchoalveolar lavage. At 2 hrs. total protein was elevated at both doses ($p \leq 0.05$), but other parameters were quite variable. By 4 hrs. post-silica exposure all parameters were elevated over the saline control ($p \leq 0.05$) with the exception of LDH activity. In a further attempt to describe the inflammatory/damage processes, luminol-dependent chemiluminescence (CL) was performed on chopped lung. At 4 hrs. post- silica, there was a 5-fold (low dose) and 10-fold (high dose) increase in stimulated CL, respectively, over saline control. The addition of inhibitors, superoxide dismutase or N-nitro-L-arginine methyl ester, caused decreases in CL activity of both dosage groups at both time points ($p \leq 0.05$). Reductions in CL activity infer that oxidants play a role in the acute phase response. Study results indicate the initial stages of inflammation/damage begin to appear by 2 hours after silica exposure, but are definitive by 4 hours. (Supported by NIOSH Grant U60/CCU306149-03)

278 EFFECT OF *IN VIVO* MINERAL DUST EXPOSURE ON HPRT MUTATION FREQUENCY IN RAT LUNG EPITHELIAL CELLS. Kevin E. Driscoll, Laurie C. Deyo, Janet M. Carter, Brian W. Howard and Diana G. Hassenbein. The Procter & Gamble Company, Cincinnati, OH, USA.

To better understand mechanisms underlying mineral dust-induced lung carcinomas in rats, we developed an *in vivo* model to investigate the potential direct or indirect mutagenic effects of particulate exposure. Our experimental model is based on selection for mutations in the hprt gene of rat lung epithelial cells (RLE) by culture in 6-thioguanine (6-TG). Briefly, F344 female rats were intratracheally instilled with 1, 10, or 100 mg/kg body weight of silica or 100 mg/kg carbon black and sacrificed after 15 months. Histopathology indicated all treatments resulted in pulmonary inflammation. The RLE cells were isolated by pronase digestion and density gradient centrifugation. RLE cells isolated in this manner could be maintained in culture for ≥4 weeks using a defined media containing 7.5% FCS and growth factors including EGF, insulin and IGF-1. Twenty-four hr after plating the RLE cells 6TG was added (40 μM) and the cells grown for ~ 2 weeks at which time the number of 6TG resistant keratin staining colonies was determined. Mutation frequency for RLE cells from saline instilled control rats was 9 ± 3 mutants/10^6 cells. Silica exposure resulted in a dose-related increase in mutation frequency with 36 ± 5; 50 ± 12; and 207 ± 60 mutants/10^6 cells detected after instillation of 1, 10 and 100 mg/kg, respectively. Mutation frequency after 100 mg/kg carbon black was 89 ± 27 mutants/10^6 cells. These results demonstrate that *in vivo* exposure to inflammatory doses of these mineral dusts can cause mutations in RLE cells. Studies are continuing to determine the role of inflammatory cells in this response.

279 PULMONARY TOXICITY ASSESSMENTS FOLLOWING HIGH-DOSE OVERLOAD EXPOSURES TO TiO_2 OR CARBONYL IRON PARTICLES IN RATS. DB Warheit, DA Lauder, MA Hartsky, DuPont Haskell Lab, Newark, DE.

This study was to designed to demonstrate impairment of pulmonary defense/clearance functions and persistence of inflammation following high-dose inhalation exposures to titanium dioxide (TiO_2) or carbonyl iron (CI) particles. Rats were exposed to TiO_2 for 4 weeks at 3 design exposure concs. (i.e., 5, 50 and 250 mg/m^3) which were similar to those carried out in an earlier 2-year chronic inhalation study. Additional groups of rats were exposed for 4 weeks to identical concentrations of CI particles. Following exposures, the lungs of sham, TiO_2-, and CI-exposed animals were lavaged or perfused for pulmonary cell labeling and histopathology studies at sequential postexposure time periods (i.e., immediately after exposure, 1 week, 1, 3 and 6 months). The results demonstrated a prolonged pulmonary inflammatory response in rats exposed to TiO_2 or CI particles at 250 mg/m^3 in comparison to controls or to animals exposed at lower dust concentrations. In addition, pulmonary clearance of inhaled dust particles, as well as alveolar macrophage chemotaxis and phagocytosis were impaired. The results of these studies clearly demonstrate that exposure to 250 mg/m^3 TiO_2 or carbonyl iron particles in rats produces an overload effect which could contribute to the pulmonary effects observed in the earlier 2-year inhalation study with titanium dioxide particles. (Sponsored by the CMA-TiO_2 Panel).

280 THE THIRD EDUCATOR'S FORUM: APPROACHES TO EDUCATING THE PUBLIC ABOUT TOXICOLOGY. BJ Kelman. Golder Associates, Inc., Redmond, WA.

The United States currently spends vast sums on perceived rather than real risks; particularly in the area of potential chemical hazards. Many scientists feel that this is due to a fundamental lack of understanding of the basic principles of toxicology by the public. Many educators feel that the best setting to teach these principles is in the K-12 education system. In recognition of the need for toxicology to be taught in the precollege educational system, the third Educator's Forum of the Society of Toxicology emphasizes education in the K-12 environment. However, nearly all teaching environments are addressed since presentations cover the range of grades K-12 through that of the graduate and also education of the general public on toxicology issues. Five presentations will address the teaching of toxicology in grades K-12. One presentation describes a program designed to link undergraduate biological science to the precollege teaching environment, while another describes a program for enhanced teaching of undergraduates. Two additional presentations describe approaches for teaching toxicology to professional students. Finally, two presentations will address education and teaching techniques for the lay public. Consistent with the increased use of computers throughout society, three of the presentations will offer hands-on experience with computer programs designed to enhance the learning environment. This Poster Session/Special Event will enhance your ability to communicate with students regardless of whether you are a toxicologist called on by the public schools to discuss toxicology as a career, a professional educator in a college or university, or a professional who must communicate principles of toxicology to a lay audience. This Special Event is sponsored by the SOT Toxicology Initiatives Task Force.

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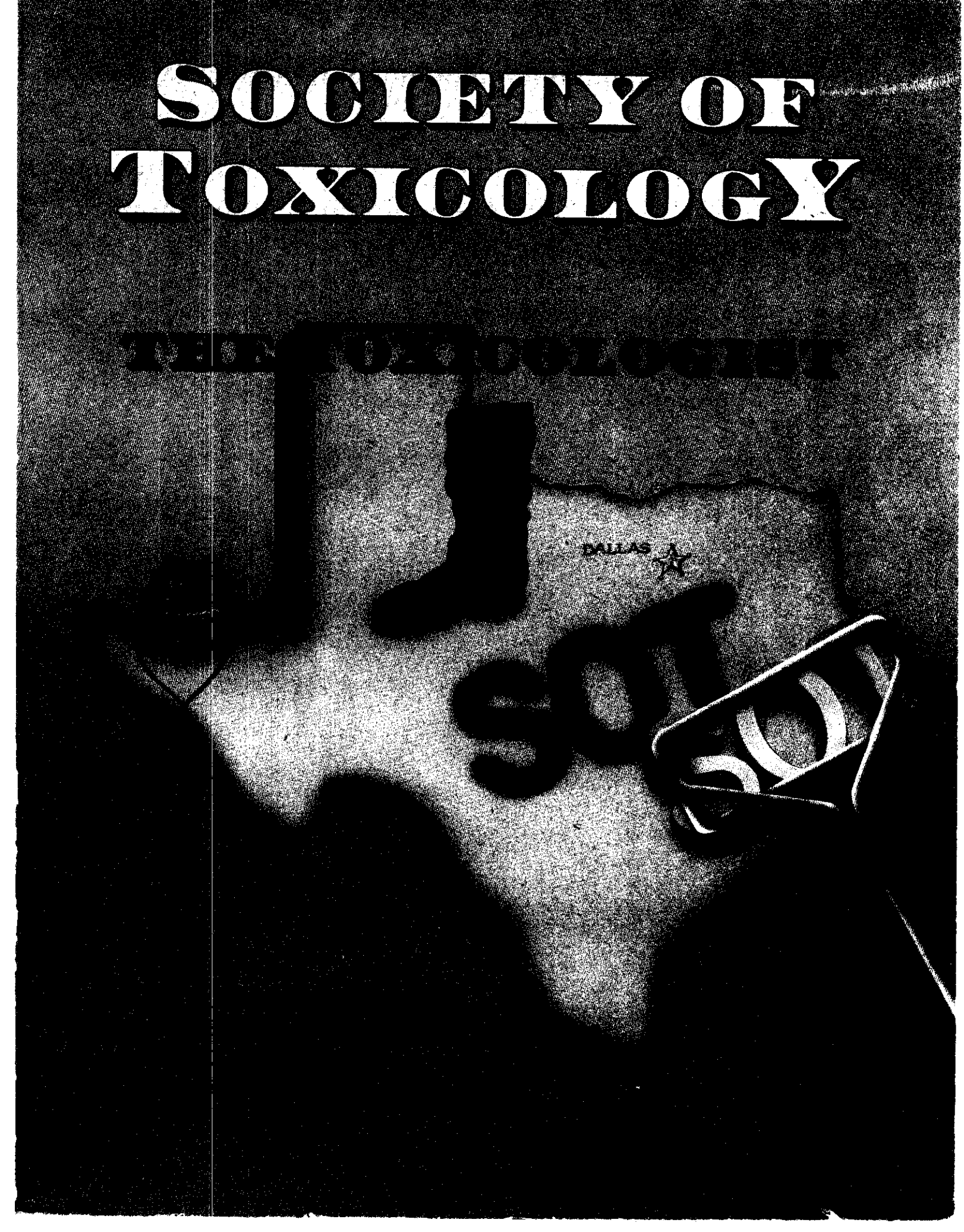

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Preface

This issue of *The Toxicologist* is devoted to the abstracts of the presentations for the symposium, platform, poster/discussion, and poster sessions of the 33rd Annual Meeting of the Society of Toxicology, held at the Loews Anatole Hotel, Dallas, Texas, March 13-17, 1994.

An alphabetical Author Index, cross-referencing the corresponding abstract number(s), begins on page 439.

The issue also contains a Keyword Index (by subject or chemical) to the titles of all the presentations, beginning on page 467.

The abstracts are reproduced as accepted by the Program Committee of the Society of Toxicology, and appear in numerical sequence, other than the symposia abstracts, which are collected in the front.

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