4 prehaptens) and 5 non-sensitizers using the standardized protocol in 3 repetitions yielded a positive result (at least 2/3 runs positive) for 14/15 sensitizers, while the 5 non-sensitizers gave negative results, yielding a high capacity (95% accuracy) for hazard prediction. Furthermore, we observed a significant correlation of results obtained in the COCAT with *in vivo* data on sensitization potency. These data indicate that the COCAT, integrating keratinocyte responses, metabolism and DC activation, has the potential to fill the gap regarding the prediction of sensitization potency.

2864 Evaluation of 4-methylcyclohexanemethanol in a Combined Irritation and Local Lymph Node Assay in BALB/c Mice

V. J. Johnson[1], S. S. Auerbach[2], M. I. Luster[1], S. Waidyanatha[2], S. A. Masten[2], M. S. Wolfe[2], F. G. Burleson[1], G. R. Burleson[1] and D. R. Germolec[2]. *[1]Burleson Research Technologies, Inc., Morrisville, NC and [2]National Toxicology Program, National Institute of Environmental Health Sciences, NIH, Research Triangle Park, NC.*

4-Methylcyclohexanemethanol (MCHM) is a flotation reagent used in fine coal beneficiation. On January 9, 2014 crude MCHM (~88.5% MCHM) was inadvertently released into the Elk River in Charleston, WV resulting in temporary contamination of 15% of the state's tap water and causing significant dermal exposure. These studies were undertaken to determine whether crude MCHM or pure MCHM has the potential to produce dermal irritation and/or sensitization. Female BALB/c mice were treated daily for 3 consecutive days by direct epicutaneous application of 25 µL of various concentrations of crude or pure MCHM to the dorsum of each ear. A mouse ear swelling test, used to determine irritancy potential, was conducted in combination with the Local Lymph Node Assay (LLNA) to determine dermal sensitizing potential. Dermal exposure to pure MCHM caused irritation of the skin at the application site at concentrations above 20% and overt toxicity at the 100% concentration, but did not induce sensitization. Mice treated with ≥75% crude MCHM also showed evidence of dermal irritation, although weaker when compared to pure MCHM. Overt toxicity was also observed in mice treated with 100% crude MCHM, although the severity was less than pure MCHM. Dermal application of crude MCHM resulted in increased lymphocyte proliferation in the draining lymph node at concentrations ≥5%. The Stimulation Index (SI), a measure of sensitization, was significantly increased in mice treated with ≥20% crude MCHM, relative to the vehicle control group. The SI was above 3, the threshold for positive sensitization potential, following dermal application of ≥40%. These results indicate that crude MCHM has the potential to cause dermal sensitization at exposure concentrations that are non-irritating. This work was supported by NIH contract HHSN273201400017C

2865 Integrated Testing Strategy for Skin Sensitization Assessment

A. Del Bufalo[2], C. Piroird[2], H. Nocairi[2], J. Eilstein[2], A. Detroyer[2], C. Gomes[2], T. Pauloin[1] and S. Teissier[2]. *[1]L'Oreal, Asnières, France and [2]L'Oreal, Aulnay sous Bois, France.* Sponsor: E. DuFour.

Skin sensitization is a delayed type allergy consisting of a cellular immune reaction to electrophilic small molecular weight chemicals. Since March 2013, the 7th Amendment of the Cosmetics Directive prohibits in Europe the marketing of cosmetic products containing ingredients which were tested on animal-based assays and prompted the implementation of Integrated Approaches to Testing and Assessment (IATA) for Skin Sensitization. While there is a common understanding of the Adverse Outcome Pathways (AOP's) leading to skin sensitization, as well as a wide appropriation of a core battery of assays addressing these AOP key events, the ways of integrating such data to allow risk assessment of new ingredients is still a challenge. For that purpose, we generated a complete training set of data using 8 parameters from *in silico* predictions models (TIMES,Toxtree), from DPRA, U-SENSTM, KeratinoSens and PGE-2 assays as well as two physicochemical parameters (volatility and pH) on 165 substances covering the diversity of cosmetic ingredients and having an LLNA-based S/NS classification. We submitted it to statistical analysis: from the large number of supervised classification models proposed in the literature, we chose five different methods: Boosting, Naïve Bayes, SupportVectorMachine (SVM), Sparse PLS-DA and Expert Scoring. These methods have strong differences, but they all produce posterior probability of belonging to the group of interest ("sensitizer"). We combined them by the stacking methodology of Wolpert and Breiman, in order to obtain a specific "stacking" meta-model. Results from this two classes (Sensitizer/Non Sensitizer) prediction meta-model obtained on a validation data set show predictive performances of 93 % concordance, 96% sensitivity and 90 % specificity. Based on this experience on cosmetic case studies we will design tiered testing strategies to insure consumer safety while fitting to industrial needs.

2866 Irritancy and Allergic Responses Induced by Topical Application of Didecyldimethylammonium Chloride

S. E. Anderson, H. Shane, C. Long, E. Lukomska, B. J. Meade and N. B. Marshall. *CDC NIOSH, Morgantown, WV.*

Didecyldimethylammonium chloride (DDAC) is a dialkyl-quaternary ammonium compound that is used in numerous products for its bactericidal, virucidal and fungicidal properties. There have been reports of immediate and delayed hypersensitivity reactions following occupational exposure to this chemical, however the sensitization potential of DDAC has not been thoroughly investigated. The purpose of these studies was to evaluate the irritancy and sensitization potential of DDAC following dermal exposure. DDAC induced significant irritancy, evaluated by ear swelling, when female Balb/c mice were treated with concentrations 0.5% and higher. Initial evaluation of the sensitization potential was conducted using the local lymph node assay (LLNA) at concentrations ranging from 0.0625% to 1%. A dose responsive increase in lymphocyte proliferation was observed reaching statistical significance at 0.25% (non-irritating) with a calculated EC3 value of 0.17%. Dermal exposure to DDAC did not induce production of IgE as evaluated by phenotypic analysis of draining lymph node cells (IgE+B220+) and measurement of total serum IgE levels. Additional phenotypic analysis revealed significant and dose-responsive increases in the absolute number of B-cells, CD4+ T-cells, CD8+ T-cells and dendritic cells, along with significant increases in the percent of B-cells (0.25% and 1%) and decreases in CD4+ (0.25-1%) and CD8+ (1%) T-cells at day 10 following 4 days of dermal exposure. There was also a significant and dose-responsive increase in the number of activated CD4+, CD8+, B-cells and dendritic cells following exposure to all concentrations of DDAC. These results demonstrate the potential for development of irritation and hypersensitivity responses to DDAC following dermal exposure and raise concern about occupational and consumer use of this chemical.

2867 Libby Amphibole-Induced Mesothelial Cell Autoantibodies Bind to Surface Plasminogen and Alter Collagen Matrix Remodeling

R. Hanson[2], C. Evilia[2], L. Woods[2], J. Gilmer[2] and J. C. Pfau[2]. *[1]Biological Sciences, Idaho State University, Pocatello, ID and [2]Chemistry, Idaho State University, Pocatello, ID.*

Lamellar Pleural Thickening is a fibrotic disease induced by exposure to Libby Amphibole (LA) asbestos that causes widespread scarring around the lung, resulting in progressive loss of pulmonary function. Investigating the effects of autoantibodies to mesothelial cells (MCAA) present in the study populations has been a major part of the effort to understand the mechanism of pathogenesis. It has been shown *in vitro* that mesothelial cells (Met5a) exposed to MCAA increase collagen deposition into the extracellular matrix (ECM). In this study, we sought to further elucidate why the presence of MCAA would result in increased collagen deposition by identifying the protein targets bound by MCAA on the cellular surface using biotinylation to label and isolate surface proteins. Protein targets were selected by immunoprecipitation and MCAA binding via ELISA. The fractions that demonstrated binding by MCAA were then analyzed by tandem Mass Spectrometry and MASCOT analysis. We identified annexin A5, cytoskeletal keratin 18, and plasminogen as possible candidate targets that could affect the regulation of the ECM. The most promising result from the MASCOT analysis, plasminogen, was tested for MCAA binding using purified human plasminogen in an ELISA. We report that serum containing MCAA bound at an optical density (OD) 3 times greater than that of controls, and LA-exposed subjects had a high frequency of positive tests for anti-plasminogen autoantibodies. This work implicates the involvement of the plasminogen/plasmin system in the mechanism of excess collagen deposition in Met5a cells exposed to MCAA. Elucidating this mechanism could contribute to the understanding of LPT.

2868 Libby Amphibole-induced Mesothelial Cell Autoantibodies Promote Collagen Deposition in Mice

J. Gilmer[1], K. Serve[2], R. Hanson[1] and J. C. Pfau[1]. *[1]Biological Sciences, Idaho State University, Pocatello, ID and [2]Biology, Mars Hill University, Mars Hill, NC.*

Libby Amphibole (LA) asbestos has been shown to cause a unique and progressive lamellar pleural fibrosis (LPF) that is associated with severe declines in pulmonary function. This disease is also associated with the production of anti-mesothelial cell autoantibodies (MCAA), which can induce collagen production from cultured human mesothelial cells.

The Toxicologist

Supplement to *Toxicological Sciences*

55th Annual Meeting and ToxExpo™

SOT

New Orleans, Louisiana

March 13–17, 2016

OXFORD
UNIVERSITY PRESS

ISSN 1096-6080
Volume 150, Issue 1
March 2016

www.toxsci.oxfordjournals.org

The Official Journal of the Society of Toxicology

SOT | Society of Toxicology

Creating a Safer and Healthier World by Advancing the Science and Increasing the Impact of Toxicology

www.toxicology.org

Preface

This issue is devoted to the abstracts of the presentations for the Continuing Education courses and scientific sessions of the 55th Annual Meeting of the Society of Toxicology, held at the New Orleans Ernest N. Morial Convention Center, March 13–17, 2016.

An alphabetical Author Index, cross referencing the corresponding abstract number(s), begins on page 603.

The issue also contains a Keyword Index (by subject or chemical) of all the presentations, beginning on page 629.

The abstracts are reproduced as accepted by the Scientific Program Committee of the Society of Toxicology and appear in numerical sequence. Author names which are underlined in the author block indicate the author is a member of the Society of Toxicology. For example, J. Smith.

Scientific Session Types:

- CE Continuing Education Courses
- EC Education-Career Development Sessions
- FS Featured Sessions
- HH Historical Highlights Sessions
- IS Informational Sessions
- PL Platform Sessions
- PS Poster Sessions
- RI Regional Interest Sessions
- R Roundtable Sessions
- S Symposium Sessions
- W Workshop Sessions

The 2016 SOT Mobile Event App and Online Planner

The Mobile Event App and Online Planner are available via the SOT website and app marketplaces. These mobile tools enable you, the attendee, to engage with organizers, exhibitors, and each other, and to manage your time and maximize your experience during the Annual Meeting. You also can access some ePosters electronically via the Mobile Event App until May 11, 2016.

To cite a 2016 SOT Annual Meeting Abstract, please format as follows: *The Toxicologist*, Supplement to *Toxicological Sciences*, 150 (1), Abstract #__, 2016, Title, First Author.

Copies of *The Toxicologist* are available at $40 each plus shipping ($15 shipping & handling in the USA and $50 for overseas shipments) from:

Society of Toxicology
1821 Michael Faraday Drive, Suite 300 • Reston, VA 20190

www.toxicology.org