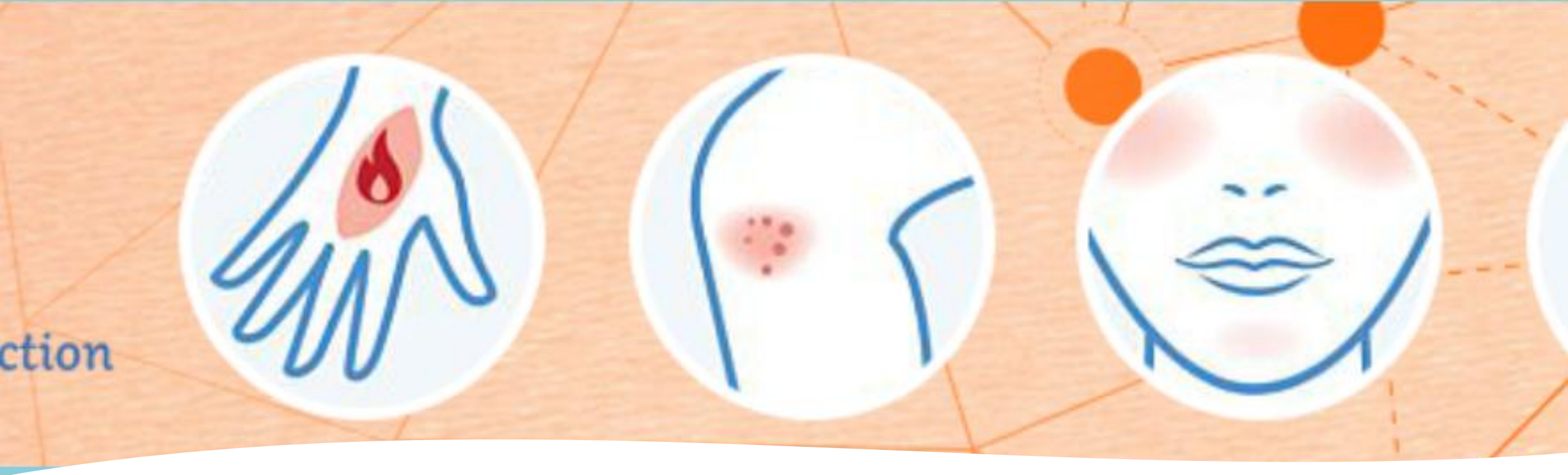
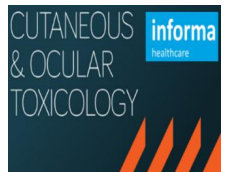




Dermal Toxicology Specialty Section

Annual Business Meeting 2025

Thank you Sponsors!



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Welcome!

DTSS Business Meeting Agenda

- Meet the current DTSS Officers
- About DTSS
- 2024 DTSS activitie
- Treasurer's Report
- New business, open discussion

Meet the Current Officers



Kimberly Norman
Past President &
Councilor



Sarah Gilpin
President



Azita (AJ) Cuevas
Vice-President



Jamie Coleman
Vice-President
Elect



Mayukh Banerjee
Secretary/
Treasurer



Ying Huang
Sr. Councilor



NAME
Jr. Councilor



Alexandra Nail
Postdoctoral
Representative

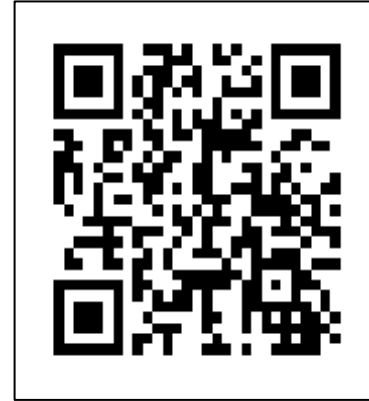


Andrew Roney
Graduate Student
Representative

Exiting Officers, thank you for your service...Kim, Praji, and Alex!

About DTSS

- DTSS was formed in 2000
- Membership
 - 2024 - 109 members



Scan to join DTSS
LinkedIn Page

Can join through
DTSS website
([Dermal Toxicology
Specialty Section |
SOT](#))



Summary of 2024 DTSS Activities

Webinars

- *A Comparative Study of the in vitro Dermal Absorption of Radiolabeled Benzophenone Through Human Skin*, October 23, 2024

Newsletters

- Spring 2024
- Fall 2024

DTSS Endorsed Sessions at the Annual 2025 SOT meeting

- CE Course- *Roadmap for Safety Evaluation of Emerging Consumer Products: Application and Adaptation of Existing Practices*, Sunday, March 16
- Informational Session- *Skin Deep: Navigating the Evolution and Application of Dermal Absorption Modeling in Modern Risk Assessment of Cosmetics and Personal Care Products*, Wednesday, March 19

Secretary/Treasurer's Report

- As of 15-Mar-2025, DTSS membership = 109.
- At the end of FY 2024, DTSS had cash reserves of \$4,722.
- Current reserve is sufficient to cover the annual reception and student awards.
- If members wish to contribute to DTSS, send contributions to SOT, c/o Rosibel Alvarenga and specifically note DTSS.



New Business

Open Discussion

2026 Session Proposals

Consider submitting a scientific session, symposium, workshop, or Continuing Education (CE) course focused on dermal toxicology for the 2026 SOT Annual Meeting – **DUE May 15th**

Programing for 2026

Webinars

Newsletters

Assistance Ranking Awards

Committees

Newsletter

Trainee/Students News

Award Ranking

DTSS Reception

March 18, 2025

6-7:30 PM



**Congratulations
New DTSS Officers!**



2025 DTSS Awards



2025 DTSS Awards

- *Are you a trainee, student? Consider applying!*
- *Know a potential candidate for this award? Encourage them to apply! **Deadline: Jan 8, 2026***

Check eligibility at: [DTSS awards](#)



Thank you Sponsors!



2025 DTSS Awards

This year we awarded four (4) awards!

- *Dermal Toxicology SS - Paper of the Year*
- *Informa Healthcare Paper of the Year in the Field of Dermal Toxicology*
- *Two (2) – Edgewell Personal Care Awards*

Thank you Sponsors!



DTSS Paper of the Year Award

In Recognition of an Exceptional Publication in the Field of Skin Toxicology and Pharmacology

Nancy Hopf, PhD, et. al.

Unisante Center for Primary Care & Public Health, U. of Lausanne, Switzerland

Human Skin Absorption of Three Phthalates

Toxicol Lett. 2024 Jul;398:38-48.

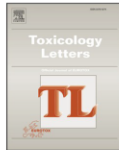
Toxicology Letters 398 (2024) 38–48



Contents lists available at [ScienceDirect](#)

Toxicology Letters

journal homepage: www.journals.elsevier.com/toxicology-letters



Human skin absorption of three phthalates

Nancy B. Hopf^{a,b,*}, Hélène P. De Luca^{a,b,2}, Myriam Borgatta^{a,b}, Holger M. Koch^{c,3}, Claudia Pálmke^c, Manon Benedetti^a, Aurélie Berthet^{a,b,4}, Elena Reale^{a,b,5}

^a Center for Primary Care and Public Health (Unisanté), University of Lausanne, Route de la Corniche 2, Epalinges, Lausanne 1066, Switzerland
^b Swiss Center for Applied Human Toxicology (SCAHT), Basel
^c Institute for Prevention and Occupational Medicine of the German Social Accident Insurance - Institute of the Ruhr-University Bochum (IPA), Bochum, Germany

ARTICLE INFO

Editor:

Key words:
Skin penetration
Skin permeation
Human skin uptake
Biomonitoring

ABSTRACT

Population studies reveal widespread exposure to phthalates. Understanding their absorption, distribution, metabolism, and excretion is vital to reduce exposure. However, data on skin absorption remain limited. We thus aim to characterize the skin permeation of three phthalates in a mixture, neat or in emulsion; di(2-ethylhexyl) phthalate (d4-DEHP), dibutyl phthalate (d4-DBP), and diethyl phthalate (d4-DEP), by comparing in vitro human skin (800 µm) permeation (24 hours) results using flow-through diffusion cells with urine results obtained from volunteers exposed to the same mixture applied to a forearm (40 cm²). Metabolites were analyzed in receptor fluids and urine. Phthalates crossed the skin barrier and metabolized into monoesters before elimination. Increased permeation was observed for phthalates in emulsion compared to neat substances, with polyethylene glycol (PEG) in the receptor fluid enhancing emulsion permeation, but not affecting neat substances. In vitro results mirrored in vivo findings: DEP showed rapid permeation (J: ~2 ug/cm²/h) and urinary excretion peaking at six hours post-application, whereas DBP exhibited slower kinetics (J: ~0.1 ug/cm²/h), with a urinary peak at 15–17 hours post-application. DEHP had minimal permeation (J: ~0.0002 ug/cm²/h) with no observable urinary peak. These findings underscore the importance of comprehending phthalate skin absorption for effective exposure mitigation strategies.

1. Introduction

Research has shown that exposures to phthalates is associated with various disorders, but most significantly with reproductive disorders (Hliseníková et al., 2020). They are used in many different professional and consumer products to impart elasticity, flexibility, and durability, as plasticizers, but also for their solvent properties (Hines et al., 2009). Phthalates are not chemically bound to the polymer and can migrate to the environment.

Phthalate exposures are ubiquitous in the environment and have been detected in indoor air (Becker et al., 2002), food and other materials (Kumar and Maitra, 2016) as well as cosmetics (Olkowska and Grzinić 2022). Biomonitoring studies focusing on the general population

in the US (Silva et al., 2004) and Germany (Koch et al., 2017) have highlighted that phthalate metabolites are consistently present in urine, indicating widespread exposures.

Phthalates enter the body mainly by ingesting food and drinks for the general population but also by inhaling phthalates found in the air and by skin when in contact with phthalate containing products (Zhao et al., 2022) (Hliseníková et al. 2020; Benjamin et al. 2017). Toxicokinetic research has focused on ingestion and to a lesser degree inhalation and dermal routes of exposure. This is because the relative importance of skin exposure compared to ingestion is lower (Giovannoulis et al., 2018). The significance of dermal uptake is usually governed by molecular weight and water solubility according to Fick's law of diffusion. Phthalate skin absorption increases from high molecular weight

* Corresponding author at: Center for Primary Care and Public Health (Unisanté), University of Lausanne, Route de la Corniche 2, Epalinges, Lausanne 1066, Switzerland.

Informa Healthcare Paper of the Year Award

*In recognition of the best paper in dermal toxicology
published in Cutaneous and Ocular Toxicology*

Hans Raabe, MS, et. al.

Institute of In Vitro Sciences, Gaithersburg, MD,
USA

*Human Relevance of in vivo and in
vitro Skin irritation for Hazard
Classification of Pesticides.*

Cutan Ocul Toxicol. 2024 Aug 24:1-21.

CUTANEOUS AND OCULAR TOXICOLOGY
<https://doi.org/10.1080/15569527.2024.2387596>



OPEN ACCESS

RESEARCH ARTICLE

Human relevance of in vivo and in vitro skin irritation tests for hazard classification of pesticides

Hans A. Raabe^a, Gertrude-Emilia Costin^a, David G. Allen^{b#}, Anna Lowit^c, Marco Corvaro^d, Lindsay O'Dell^c, Julie Breeden-Alemi^c, Kathryn Page^e, Monique Perron^c, Tara Flint Silva^c, Walter Westerink^f, Elizabeth Baker^g and Kristie Sullivan^a

^aInstitute for In Vitro Sciences, Gaithersburg, MD, USA; ^bInotiv, Durham, NC, USA; ^cUS Environmental Protection Agency, Washington, DC, USA; ^dCorteva Agriscience, Rome, Italy; ^eThe Clorox Company, San Francisco, CA, USA; ^fCharles River Laboratories, Den Bosch, The Netherlands; ^gPhysicians Committee for Responsible Medicine, Washington, DC, USA

ABSTRACT

Background: Test methods to inform hazard characterization and labeling of pesticides to protect human health are typically conducted using laboratory animals, and for skin irritation/corrosion the rabbit Draize test is currently required by many regulatory agencies. Although the Draize test is generally regarded to provide protective classifications for human health, new approach methodologies (NAMs) have been developed that offer more human relevant models that circumvent the uncertainty associated with species differences that exist between rabbits and humans. Despite wide applicability and use of these test methods across a broad range of chemicals, they have not been widely adopted for testing pesticides and pesticidal formulations. One of the barriers to adoption of these methods in this sector is low concordance with results from the Draize rabbit test, particularly for chemicals within the mild to moderate irritation spectrum.

Methods: This review compares and contrasts the extent to which available models used in skin irritation testing mimic the anatomy and physiology of human skin, and how each aligns with the known key events leading to chemically-induced adverse skin irritation and corrosion. Doing so fully characterizes the human relevance of each method.

Results: As alternatives to the rabbit Draize test, several protocols using *ex vivo*, *in chemico*, and *in vitro* skin models are available as internationally harmonized test guidelines. These methods rely on a variety of models of human skin, including excised rodent skin, synthetic biochemical models of barrier function, cell culture systems, and reconstructed human tissue models. We find these models exhibit biological and mechanistic relevance aligned with human skin irritation responses. Further, recent retrospective analyses have shown that the reproducibility of the Draize test is less than 50% for mild and moderate responses, with many of the replicate predictions spanning more than one category (e.g., a moderate response reported in one study followed by a non-irritant response reported in another study).

Conclusions: Based on this comparative evaluation, we recommend top-down and bottom-up testing strategies that use the most human relevant *in vitro* test methods for skin irritation and corrosion classification of pesticides and pesticide formulations. To further discriminate among mild and non-irritant formulations, optimization of a cytokine release protocol and subsequent analyses of reference formulation test results is recommended.

ARTICLE HISTORY

Received 2 April 2024
Accepted 24 July 2024

KEYWORDS

skin irritation; skin corrosion;
new approach methodologies;
reconstructed human
epidermis; pesticide;
formulation; cytokine release;
non-animal

Edgewell Personal Care Award

In recognition of outstanding Postdoctoral Fellows and Graduate students for their contribution to skin-related research

Lindsey Shim
PhD Student

*University of Texas,
Rio Grande Valley*



TC-PTP overexpression in mouse epidermis promotes UVB-induced apoptosis by regulating p38 MAPK signaling pathway

Poster #3120 - Mon. March 17th 1:45-4:15p

Background and Purpose: T-cell protein tyrosine phosphatase (TC-PTP) is a non-receptor PTP that has been shown to have various roles in signaling pathways. Our previous studies have demonstrated that the TC-PTP deficiency in the epidermis can exacerbate hyperplastic response by inducing epidermal cell proliferation in response to tumor promoter TPA or UVB exposure. This implies that TC-PTP plays a tumor-suppressive role in the epidermis and provides protection against UVB radiation, which is well known to contribute to skin cancer development. The p38 mitogen-activated protein kinase (MAPK) is one of serine/threonine kinases that are activated through environmental stress including UVB. It has been demonstrated to play a crucial role in mediating inflammatory responses and apoptosis following UVB exposure. In the present study, we aim to elucidate the molecular mechanisms by which TC-PTP influences the p38 MAPK pathway and its subsequent effects on cellular responses to UVB exposure.

Conclusions: Our findings reveal insights into the protective role of TC-PTP against UVB-induced skin damage via the regulation of p38 MAPK signaling pathway. Understanding the interaction between TC-PTP and the p38 MAPK signaling pathway is essential, as these underlying molecular mechanisms could be a potential therapeutic target for skin cancer prevention and treatment.

Edgewell Personal Care Award

In recognition of outstanding Postdoctoral Fellows and Graduate students for their contribution to skin-related research

Andrew Rooney
PhD Student

Michigan State University



Investigation of Inflammatory Cytokines in the Long-term Toxicity Induced by Acute Cutaneous Nitrogen Mustard Exposure

Poster #3708 - Tues. March 18th 1:45-4:15p

Background: Sulfur Mustard (SM) and its analog nitrogen mustard (NM) are both potent mustard vesicating agents that cause acute and long-term toxicity to the skin. Blistering and inflammation are among the acute effects of dermal exposure, with cherry angiomas, fibrosis, psoriasis, and recurrence of blistering with chronic inflammation developing later. SM is a chemical warfare agent (CWA), and NM is a chemotherapeutic agent and a potential CWA. Due to the recent reports of the use of SM in Syria, both mustard agents could be used in warfare and as weapons of terror. An increase in the pro-inflammatory cytokine levels has been found in the skin of war veterans exposed to SM. However, animal studies to elucidate the inflammatory mechanism in long-term skin effects from mustard cutaneous exposure are scarce. Studies in our lab show that acute dermal NM exposure results in long-lasting inflammation and psoriatic lesions as well as mast cell activation. Cytokines play an important role in the regulation of the immune system and mast cells. This study was carried out to further investigate the effect of NM on cytokines such as the C-C chemokine receptor type 2 (CCR2)/C-C chemokine ligand type 2 (CCL2) that can be released from mast cells or activate mast cells leading to long-term inflammatory and immune

dysregulation, which is a key area of interest in therapeutic research for mustard skin and systemic toxicity.

Conclusions: These results show that NM-induced increased expression levels of CCL2/CCR2 at later time points coincide with the increase in the mast cell degranulation, but not the initial burst of NM caused mast cell activation. Further investigation into the inflammatory and immune pathways, especially the CCL2/CCR2 and mast cells, will aid in understanding the mechanisms of action of mustard agents.

Tablet drawing!

Thanks to our sponsor:



MB RESEARCH
LABORATORIES



Closing Remarks

