Immune, Infectious and Dermal Disease Prevention Program

July 2017

At-A-Glance

The Immune, Infectious and Dermal Disease Prevention Program primarily focuses on hazard identification to prevent and minimize the effects of work-related dermal and immune diseases. This snapshot shows recent accomplishments and upcoming work.

What are our priorities?

The National Institute for Occupational Safety and Health (NIOSH) Immune, Infectious and Dermal Disease Prevention Program works with partners in industry, labor, trade associations, professional organizations, and academia. The program focuses on these areas:

- Reducing immune abnormalities (including immune aspects of asthma) associated with workplace exposures
- Reducing occupational skin disorders and exposures that result in disease
- Reducing transmission of infectious diseases in the workplace

What do we do?

- Conduct research to better understand the impact of occupational exposures to chemical, biological, or infectious agents on the immune system.
- Identify occupational allergens that cause disease in workers in the industries with the highest burden.
- Research occupational chemical exposures to raise awareness of materials that can cause skin injury and develop strategies to prevent exposure.
- Maximize resources by using statistical modeling to prioritize chemicals to research, rather than investigating all potentially hazardous chemicals.
- Publish Skin Notations (SK), hazard warnings used worldwide, to alert workers and employers to the health risks of skin exposures to workplace chemicals.
- Improve surveillance for hazard identification, exposure assessment, and risk characterization of chemicals absorbed through the skin that lead to immune or systemic toxicity (e.g. damage to internal organs).
- Increase awareness of occupational immune and dermal health issues through collaborations with industry sector programs; contributions to field investigations; and publications and presentations of research findings.
- Investigate the routes of transmission of influenza to help assess risk of infection in healthcare workers exposed to influenza patients and determine how the virus utilizes the infected patient's own cellular machinery to mount an infection.

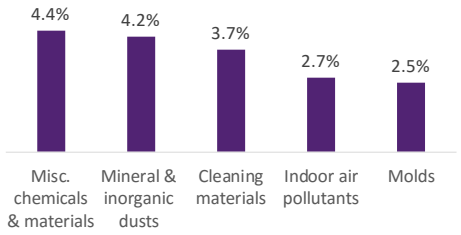
What have we accomplished?

- Published a document on setting occupational exposure limits for chemical allergens.
- Published research on how exposure to quaternary ammonium compounds increase allergic disease among healthcare workers.
- Completed sub chronic mold spore exposure studies in collaboration with the National Institute of Environmental Health Sciences.
- Published research on the dermal uptake potential of benzene and other chemicals in gasoline after occupational exposures.
- Published 50 NIOSH SK Notations including profiles for nicotine and parathion.
- Provided the NIOSH skin permeation calculator as a resource to the scientific community.

What's next?

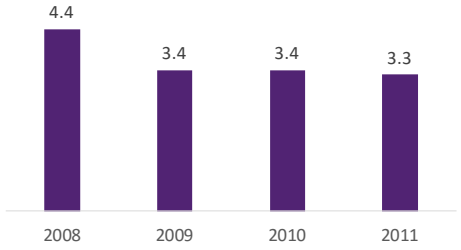
- Investigate how occupational chemical exposures influence severity and susceptibly to influenza virus.
- Publish research on the dermal uptake potential of nicotine from e-cigarettes refill liquids and applications of the data to dermal risk assessment.
- Generate detailed information about dermal permeation rates of select model chemicals to predict overall absorption.
- Conduct hazard identification on occupational chemicals and investigate the specific immunological mechanisms involved.
- Publish research in collaboration with the National Toxicology Program on sub chronic inhalation exposures to *Aspergillus fumigatus* (NTPC08022) and *Stachybotrys chartarum* (NTPC04052).
- Develop at least 20 NIOSH SK Notation profiles.

Most frequently reported causes of occupational asthma 2009-2011



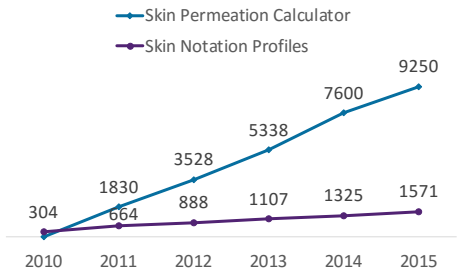
Source: NIOSH Work-Related Lung Disease Surveillance System (eWoRLD)

Rate of occupational skin diseases or disorders (per 10,000 workers)



Source: Healthy People 2020

Cumulative downloads of web resources:



Data source: NIOSH Program Records

To learn more, visit https://www.cdc.gov/niosh/programs/idid/default.html

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Center for Disease Control and Prevention
National Institute for Occupational Safety and Health

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