KIDNEY WEEK EDITION

ASN

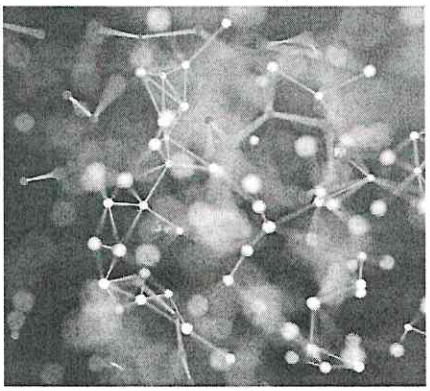
Kidney News

October/November 2018 | Vol. 10, Numbers 10 & 11

Environmental Pollutants Used in Textiles, Food Packaging May Contribute to Poor Kidney Health

Effects may be especially dangerous for children

By Tracy Hampton



Certain highly pervasive environmental pollutants may have a variety of negative effects on kidney health, according to an analysis of all relevant studies published on this topic to date.

In the *Clinical Journal of the American Society of Nephrology* analysis, researchers assessed studies on per- and polyfluoroalkyl substances (PFAS), which are a large group of manufactured non-biodegradable compounds used to provide stain and grease repelling properties to consumer products including textiles, papers, and food packaging. PFASs are also used in aqueous fire-fighting foams. Recently, they have been detected on military bases, as well as in public water supplies from industrial contamination and in agricultural and crop products.

Because PFASs have been detected in soil, air, and water from all regions of the world, with bioaccumulation across entire ecological food chains, the compounds are now recognized as globally ubiquitous pollutants.

"The kidneys are very sensitive organs, particularly when it comes to environmental toxins that can get in our bloodstream," said John Stanifer, MD, a nephrologist and clinical researcher at Duke University. "Because so many people are now exposed to these PFAS chemicals, and to the newer, increasingly produced alternative PFAS agents such as GenX, it is critical to understand if and how these chemicals may be contributing to kidney disease."

Dr. Stanifer and his colleagues systematically searched PubMed, EMBASE, EBSCO Global Health, World Health Organization Global Index, and Web of Science for studies from 1990 to 2018 on the epidemiology, pharmacokinetics, or toxicity of PFAS exposure and kidney-related health.

In the 74 studies identified (21 epidemiologic, 13 pharmacokinetic, and 40 toxicological studies), there were many adverse outcomes linked to PFAS exposure, including worse kidney function and dysregulated pathways linked to kidney disease. Those dysregulated pathways include oxidative stress pathways, peroxisome proliferators-activated receptor pathways, and NF-E2-related factor pathways.

Toxicology studies showed tubular histological and cellular changes from PFAS exposure, and pharmacokinetic studies demonstrated that the kidneys are the major routes of elimination.

"By searching all the known studies published on the topic, we concluded that there are several potential ways in which these chemicals can cause kidney damage," said Dr. Stanifer. "Further, we discovered that there have already been multiple reports suggesting that these chemicals are

Continued on page 3 >

KIDNEY WEEK SCIENTIFIC SESSIONS

THURSDAY

Imaging Cellular Structure and Dynamics from Molecules to Organisms
State-of-the-Art Lecture: Eric Betzig

Cellular and Molecular Mechanisms of Action of Klotho
Jack W. Coburn Endowed Lectureship: Chou-Long Huang

Defining Structure Function Relationship in Glomerular Failure across Disciplines and Diseases
Barry M. Brenner Endowed Lectureship: Lawrence Holzman

Consolidation: Friend or Foe?
Christopher R. Blagg, MD, Lectureship: Janis M. Orlowski

FRIDAY

Cell Atlases as Road Maps to Human Disease
State-of-the-Art Lecture: Aviv Regev

Vascular Complications in Autosomal Dominant Polycystic Kidney Disease (ADPKD)
Robert W. Schrier Endowed Lectureship: Terry J. Watnick

Designing Innovative Alternatives to RRT: Patients as Partners
Celeste Castillo Lee Memorial Lectureship: David M. White

SATURDAY

Sickle Cell Anemia: Yesterday, Today, and Tomorrow
State-of-the-Art Lecture: Griffin P. Rodgers

Evolving Complexity of the Glomerular Basement Membrane
Michelle P. Winn Endowed Lectureship: Rachel Lennon

SUNDAY

Improving Health Outcomes in the Era of Data Ubiquity
State-of-the-Art Lecture: Robert M. Califf

Using Population Data to Inform Patient Care in Nephrology
Donald W. Seldin Young Investigator Award: Morgan Grams

Inside

CKDu
A team from two NIH institutes discusses possible contributors to CKDu and the condition's continued increase around the world

ASN in Review
From establishing KidneyX to adding midcareer awards to its awards portfolio, ASN has made progress toward reaching its strategic plan goals.

Findings
Levosimendan improves GFR in cardiorenal syndrome

ASN Kidney Week—New in 2018

Transforming Nephrology through Precision Health

Early Programs

ASN offers 10 Early Programs on Tuesday, October 23, and Wednesday, October 24, preceding the Annual Meeting (October 25–28).

Here are the new or biennial Early Programs:

- **Advances in Research Conference: -Omics, Organoids, and Organs-on-Chips: Innovation Through Collaboration**
  This year's conference presents critical recent advances in the biology of organoids and organs-on-chips as they relate to the human kidneys. The conference will include descriptions of how these in vitro systems can incorporate pharmacogenetics, gene expression profiles, multiple "-omics" technologies, and biomarker discovery and translation, all for enhanced molecular understanding of the human kidneys in health and disease.

- **Clinical Nephro-Pharmacology Across the Spectrum of Kidney Diseases**
  This program is designed to review fundamental issues related to clinical pharmacology in kidney diseases, as well as to improve knowledge and skills in the areas of drug dosing and pharmacology across the spectrum of kidney function and disease states. Special focus is given to anticoagulants and the toxicity of cancer medications.

- **Evaluation and Management of Kidney Stones**
  Nephrologists are often called to evaluate and manage patients with recurrent kidney stones. This program reviews the current state-of-the-art with respect to evaluation and management of all forms of stone disease. Topics include the role of stone imaging modalities, as well as indications, risks, and benefits of various surgical approaches for stone removal.

- **Polycystic Kidney Disease: Translating Mechanisms into Therapy**
  Recent advances in the pathophysiology and therapeutics for PKD will be the focus of this program. Reviews of recently completed clinical trials, including vasopression receptor antagonists, will be discussed, as well as new strategies to assess risk for ADPKD progression, which will likely play a key role in identifying patients who may benefit from therapeutic interventions.

Expanded Fellows-in-Training Bowl

Thursday, October 25, and Friday, October 26

Which nephrology training team will reign supreme? This year's competition is a two-day, single-Elimination Round on Thursday at 10:30 a.m. Eight teams will compete in Nephron Challenges that test medical knowledge and content retention—and buzzer skills.

- Semi-Finals on Friday at 10:30 a.m.—
  4 teams compete in case-based debates.
- Finals on Friday at 11:30 a.m.—
  Final 2 teams complete in Nephron Challenges.

Visit the Exhibit Hall, and cheer on your favorite teams!

ASN TV

We are excited to announce the launch of ASN TV at Kidney Week 2018. ASN TV will bring a new element to the conference through the use of video to enhance your experience. View daily episodes with conference news (e.g., interviews, session highlights, attendees' insights and reactions) and in-depth leadership case studies.

ASN TV will be on screens around the convention center as well as available on select hotel channels. This content is available on the ASN website, on YouTube, as well as across social media channels.

iPosters

Your Annual Meeting registration includes complimentary access to iPosters, a cutting-edge technology resource that transforms the poster hall into an online and mobile experience—both during and after Kidney Week. iPoster features include:

- Interactive interface to browse uploaded posters
- Keyword search and multiple indices to quickly find uploaded posters
- Various communication tools

Access iPosters at www.asn-online.org/KWiPosters.

In addition to the new items here, don't forget to check out these events:

- Welcome Reception in the Exhibit Hall on Thursday, 6:30–7:30 p.m.
- Daily state-of-the-art lectures during the plenary sessions (Thursday–Sunday, 8:00–9:30 a.m.)
- Daily poster presentations with more than 3000 posters (Thursday–Saturday, 9:30 a.m.–2:30 p.m.)
- ASN Communities Lounge in the Exhibit Hall (Thursday–Saturday, 9:30 a.m.–2:30 p.m.)

Environmental Pollutants

Continued from page 1

associated with worse kidney outcomes."

Fan Fan Hou, MD, PhD, a researcher at Southern Medical University, in Guangzhou, China, noted that the findings add to previous studies on PFAS compounds.

"The increase in environmental pollution, a result of accelerated industrialization and urbanization worldwide, has become a global health challenge. Although there is evidence for the association between exposure to PFAS and kidney cancer, the impacts of PFAS exposure on non-cancer kidney outcomes are inconclusive," said Dr. Hou, who was not involved with this research. "Large prospective cohort studies with accurate exposure measurement and long follow-up period are required to better understand the renal adverse effect of PFAS."

Disproportionate effect on children, ethnic and racial minorities

Experts also stress that it is concerning that children are exposed to PFAS agents to a greater extent than adults. Life-course studies will be critical to understand the long-term health impact of this exposure.

"The study of the kidney effects of perfluorinated chemicals is especially relevant in pediatrics," said Howard Trachtman, MD, who is a pediatric nephrologist at NYU Langone Health. "Because of the persistence of these chemicals in the body for extended periods of time and the association between exposure and reduced GFR that we have documented in healthy pediatric participants in NHANES, children and adolescents may be especially vulnerable to the adverse renal consequences of exposure to perfluorinated chemicals over a lifetime."

Environmental risk factors contribute to the development and perpetuation of health disparities around the world, Dr. Langone and his team noted. Contaminants have been linked to higher burdens of chronic diseases and cancers, maternal and neonatal mortality, and developmental toxicity. Dr. Langone was not involved with the study.

Studies are needed to understand the role that environmental exposure to PFAS chemicals may play in driving kidney disease disparities, Dr. Langone said.

"Chronic kidney disease, which affects more than 30 million people in the United States and more than 500 million people across the world, disproportionately burdens ethnic and racial minorities and people living in poverty; yet exactly what causes these disparities is not fully known," he said.