



“Exposure to toxic environmental chemicals during pregnancy and breastfeeding is ubiquitous and is a threat to healthy human reproduction....Preventing exposure to environmental chemicals is a priority for reproductive health professionals everywhere.”

These statements by the International Federation of Gynecology and Obstetrics (FIGO), an organization of obstetrical and gynecological associations from 125 countries, advocate that reproductive health professionals make environmental health a routine part of care.

The Problem Worth Solving: Toxic chemicals have a major impact on pregnancy, childhood diseases, adult diseases and morbidity. Lead mercury, phthalates, Bisphenol A, flame retardants, Teflon, and pesticides are among the chemicals of concern with increasing evidence of widespread exposures and potential health risks, particularly during vulnerable periods of development.¹ These problems include cancer, obesity, diabetes, asthma, ADHD and other behavioral and cognitive problems. Immediate health impacts include miscarriage, preterm birth and birth defects.² Unlike pharmaceuticals, and because of deficiencies in the current regulatory structure, most environmental chemicals have entered the marketplace without comprehensive information regarding their impact on human reproductive health.³

Many toxic chemicals disproportionately impact vulnerable populations, leaving underserved women more susceptible to adverse impacts and less likely to have access to evidence-based messaging to reduce exposures. The impacts of chemical exposure can be exacerbated by other factors, including stress, nutritional status, housing quality, and poverty. Immigrant populations may disproportionately work in occupations associated with hazardous workplace environments.

The American College of Obstetricians and Gynecologists (ACOG) Committee on Health Care for Underserved Women stated in 2013, “The evidence that links exposure to toxic environmental agents and adverse reproductive and developmental health outcomes is sufficiently robust, and ACOG and the American Society for Reproductive Medicine join leading scientists and other clinical practitioners in calling for timely action to identify and reduce toxic environmental agents while addressing the consequences of such exposure.”⁴ Exposure to chemicals in pesticides, toys, makeup, food packaging and detergents costs the U.S. more than \$340 billion annually due to health care costs and lost wages, according to a 2016 study published in [The Lancet](#).⁵

Because of a lack of training, tools, and expertise, few reproductive health care professionals counsel pregnant women about the risks of chemical exposures.⁶ The current landscape for environmental health counseling is fragmented, disaggregated, and impersonal. In addition, there is an abundance of environmental information on the Internet that is fear-based, complex, and difficult to implement for most pregnant women. Given this current setting, we are missing two opportunities:

1. To educate pregnant women with easily actionable health-based messaging while they are uniquely positioned to make important lifestyle and behavior changes to promote a healthy pregnancy; and
2. To equip healthcare professionals (obstetricians, nurses, midwives, doulas, and other prenatal health professionals) with evidence-based tools to counsel women about reducing exposures to environmental chemicals before conception, prenatally, and in the early postnatal period.

The Solution: SafetyNEST is transforming prenatal care by equipping both reproductive health providers and the pregnant women they serve with the most accurate, evidence-based, and personalized information about the effects of toxic chemicals on prenatal and early childhood health in order to reduce the incidence of preventable diseases

linked to toxic chemical exposure. We're developing a highly engaging, interactive health platform designed to educate women about how to reduce their exposures in their daily lives, particularly in their homes. This education is intended to safeguard children's health against toxic chemical exposure. SafetyNEST's mission is to become the most trusted source for every pregnant woman and her health provider to safeguard the next generation. Partners include UCSF Program on Reproductive Health and the Environment, Icahn School of Medicine at Mount Sinai, American Medical Women's Association, and Universidade Federal do Paraná in Brazil.

SafetyNEST released an initial minimum viable product (MVP) that consists of an engaging web-based virtual home simulation that allows pregnant women to navigate through common spaces and learn how to reduce their exposure to chemicals and create healthy living environments. The simulation also provides informational messages and resources about reducing exposures. The MVP content is curated primarily from UCSF, Mount Sinai's Center for Children's Environmental Health and Pediatric Environmental Health Specialty Units. When fully developed, the SafetyNEST mobile focused platform will serve as a centralized hub for healthcare professionals and pregnant women to engage, learn, track, and share content that is easily accessible and highly relevant. Content will be delivered via the web, mobile devices, and printed resources and will be distributed through health professionals and promoted via strategic alliances and social media. SafetyNEST tested its MVP on a group of 50 pregnant women recruited by UCSF. An independent, third party consulting firm compiled and analyzed the results and prepared a full report. Key findings include:

- More than 90% of women who tried the SafetyNEST MVP found the website to be **“easy” or “very easy”** to use and rated it **“helpful” or “very helpful.”**
- 95% reported an **increase in their awareness** of these issues as a result of the SafetyNEST product.
- Between the time they reviewed the site and the time they took the survey, more than half of the respondents reported having already made **concrete changes to their behavior.**
- All the women said that they would like **their provider to start a discussion** with them about mitigating exposure to toxic chemicals, rather than waiting for them to bring it up as a patient.

SafetyNEST is now doing private demos of the Alpha version of its platform and plans to launch in Fall 2018.

Movement Building: SafetyNEST is working with strategic partners on a communications and social media driven campaign to propagate the message that every pregnant woman deserves critical and actionable prenatal information that helps reduce her baby's exposure to environmental toxins.

Evaluation: Opportunities for evaluating behavior change and the impact of SafetyNEST are being embedded into the platform's functionality and tools, and SafetyNEST's research partners are advising how best to capture data through SafetyNEST that can be relevant to research on environmental exposures and reproductive health.

Expected Impact and Breakthroughs: SafetyNEST represents a breakthrough innovation in how health providers can respond to the risk of toxic chemicals and adverse reproductive and developmental health outcomes. The combination of a widely dispersed SafetyNEST health education platform and a powerful communications and social media campaign will change every woman's expectation of their prenatal care and will, ultimately, support healthcare's important role in reducing pregnant women's exposure to toxic chemicals. Specific outcomes are:

- Improved health outcomes among pregnant women and their babies nationally and globally;
- Reduced costs of caring for children and adults suffering from toxic related diseases over their lifetimes;
- Increased public awareness about the impact of lifestyle factors and toxic chemicals on prenatal life and beyond.

Business Structure and Revenue Model:

We are a hybrid structure: SafetyNEST SCIENCE is our NGO arm and SafetyNEST is our benefit corporation. All our content is developed through SafetyNEST SCIENCE, which receives funding from foundations and individuals that is run through our fiscal sponsor, Commonweal, a national nonprofit founded in 1976 that conducts pioneering research, policy, and educational work. SafetyNEST's benefit corp. will raise capital from angel and social impact investors to build out its platform. Initial revenue streams will include affiliate and licensing sales. Our goal is to establish a social benefit model that achieves financial sustainability within three years of initial start-up funding.



Advisory Team

Alexandra Destler, EdM

Founder & Executive Director, SafetyNEST

For over two decades, Alexandra has worked to spark swift change in our public health system. Her aim? To promote global sustainability - not in theory but in practice. Rather than preaching to the converted, she brings together public and private organizations, champions and naysayers, leading healthcare, non-profit and Fortune 500 companies, to drive change. She launched the Public Health Institute's Center for Climate Change and the American Hospital Association's environmental stewardship initiative; co-developed *The Greenfield Path*, a communications project driving Ford Motor Company's move to a more sustainable business; and directed Playworks's capital campaign, raising a record \$27.3 million in two years. Most recently, vexed by a vinyl bathmat leeching chemicals into the bathwater of her baby, she resolved to focus on prenatal environmental education – our lack of which costs the US \$340B a year, and many children their health. Alexandra holds degrees from Harvard, Cornell and the Sorbonne.

Anderson Martino Andrade, PhD

Assistant Professor of Physiology, Universidade Federal do Paraná (Brazil)

Dr. Andrade is a reproductive toxicologist, who studies the impact of endocrine disrupting chemicals in laboratory animals, with particular focus on reproductive effects following developmental exposures. He received his PhD in Toxicology from the Charité Medical School Berlin (Germany) and has authored several scientific publications on the effects of endocrine disruptors, including pesticides, pharmaceuticals and phthalates. After spending one year at the Department of Preventive Medicine, Icahn School of Medicine at Mount Sinai, he started in 2015 a pilot birth cohort study in Curitiba, Brazil, to investigate the exposure of Brazilian pregnant women to environmental chemicals and the impact of such exposures in newborns.

Nicole Avena, PhD

Assistant Professor of Pharmacology and Experimental Therapeutics

Icahn School of Medicine at Mount Sinai in New York City

Dr. Nicole Avena is a research neuroscientist and expert in the fields of nutrition, diet and addiction. Her seminal research on food addiction has jump started this exciting new field of exploration in medicine and nutrition. Her research achievements have been honored by awards from several groups including the New York Academy of Sciences and the American Psychological Association. Dr. Avena's most recent book, [What to Eat When You're Pregnant](#), was released in June 2015, and it helps women understand how to eat healthy and beat cravings while pregnant. Several of the recipes from this book are featured in the SafetyNEST minimum viable product. She has appeared on the *Dr. Oz Show*, *Good Day NY*, *The Couch*, *Home and Family*, *The Better Show*, as well as many other news programs. Her work has been featured in *Bloomberg Business Week*, *Time Magazine for Kids*, *The New York Times*, *Shape*, *Men's Health*, *Details*, and many other periodicals. Dr. Avena is a member of the [Penguin Random House Speakers Bureau](#). She has the #2 most watched [TED-ED Health talk](#), *How Sugar Affects Your Brain*.

Eliza Chin, MD, MPH

Executive Director,

American Women's Medical Association

Dr. Eliza Chin is an Assistant Clinical Professor of Medicine at UCSF. She has been actively involved in AMWA for over a decade, serving as President during AMWA's 95th Anniversary Year. Working with and collaborating with women physician leaders is her passion. Dr. Chin is a graduate of UC Berkeley, Harvard Medical School, and Columbia University, Mailman School of Public Health. She completed her training in Primary Care at the Brigham and Women's Hospital in Boston. She was Assistant Professor of Medicine at Columbia for many years before relocating to California where she continues to teach medical students and practice medicine part-time. She is a

past Visiting Scholar of the Women's Leadership Institute at Mills College.

Holly Finn, MBA

Communications Advisor

Holly is the former Marvels columnist of The Wall Street Journal, where she wrote about how science and technology are changing us. Prior to that, she headed the editorial team at Google and was the communications director of The Skoll Foundation. Holly got her start in London, as the editor of How To Spend It at the Financial Times, and leader writer at The Times. Today she is a communications advisor in Silicon Valley and the author of one book, so far (*The Baby Chase*, about fertility and its opposite). Holly holds an MBA from NYU-Stern and a BA from Yale.

Katie Huffling, RN, MS

Executive Director, Alliances for Nurses for Healthy Environments

Katie Huffling is a Certified Nurse-Midwife and is an environmental health program manager at the University of Maryland School of Nursing. In her current position Katie is coordinating the efforts of the Alliance of Nurses for Healthy Environments (ANHE). In her work with ANHE, Katie works with nurses nationwide on a variety of environmental health issues. She is the author of a number of peer-reviewed articles on environmental health issues as they relate to pregnancy and has developed an assessment tool to assess chemical exposures during pregnancy. She was also a fellow in the 2011 Reach the Decision Makers program at the UCSF Program on Reproductive Health and the Environment.

Peggy Lauer, WSMA

Program Director and Administrator, Marisla Foundation

Peggy enjoyed striving for over 25 years as a journalist and an environmentalist. Her thesis is on what is missing in both fields: feminine embodied wisdom as a serious source of accurate news and shifting trends. For 12 years she ran the Resource Renewal Institute (RRI) Green Plans Program on next practices in sustainable management, leading policy tours to the Netherlands and New Zealand to meet with systems-thinking practitioners. While a visiting lecturer at the University of Auckland, Peggy learned the slow-care values of her midwife, along with Māori and Pasifika mothers-to-be. She led the Fred Gellert Family Foundation's support of the Funders Forum on Antibiotic Resistance, which inspired her and three philanthropists to launch WELL Network to educate women about the toxic body burden. Since 2004, she has volunteered the San Diego Foundation, and keeps a foot in the Bay Area, consulting for RRI and Heyday Books.

Christine Malcolm, MBA

Managing Director and West Coast Leader

Navigant Consulting.

She co-leads the Academic Medical Center and Children's Hospital practices in the Healthcare group. With more than 30 years of experience, Christine is a nationally recognized strategic healthcare leader with experience in leading transformational change in some of the leading healthcare systems, children's hospitals, healthcare technology companies, and academic medical centers in the U.S. She has a distinguished track record in the areas of healthcare leadership most important today – including clinical transformation, accountable care organization development, physician integration and alignment, performance improvement, IT, facilities, service line and clinical program development, mergers and acquisitions, strategy and growth. Christine is known for her ability to both envision and execute transformational change on behalf of her clients.

Kristee Rosendahl

Founder and CEO, KR Studio

Kristee pioneered the field of User Experience. Since co-founding The Apple Computer Human Interface Group in 1985, and as a principal designer at the Apple Multimedia Lab in San Francisco, Kristee has been practicing, teaching and speaking about this field for 30 years as one of the first visual designers in technology to help shape the UX practice. As a VP, Director, Creative Director, Art Director, Designer and Project Manager, Kristee has worked across multiple media platforms and across multiple channels to execute a vision. She has also worked with some of the best known companies to generate multiple prototypes that envision the future of digital interactivity. Kristee created some of the first early collaborative, cross-functional, world class teams that have delivered both innovative

products and groundbreaking processes for development. Her experience enables her to work with, speak to and connect diverse development disciplines together with a common language, agile processes, and vision.

Shanna H. Swan, PhD

Vice Chair for Research and Mentoring, Department of Preventive Medicine
Icahn School of Medicine at Mount Sinai Hospital.

Dr. Swan is known for her work on the impact of environmental exposures on male and female reproductive health. Since 1998, she has been conducting multi-center pregnancy cohort studies that examine the reproductive health of children and their parents in relation to common chemicals in their environment-including phthalates in cosmetics and personal care products. She has published over 150 papers, and her research played an important role in the ban on phthalates in children's toys by the Consumer Protection Act of 2008.

Tracey Woodruff, PhD, MPH:

Professor in the Department of Obstetrics, Gynecology, and Reproductive Sciences
Philip R Lee Institute for Health Policy Studies at the University of California, San Francisco
Director of the Program on Reproductive Health and the Environment.

She has done extensive research and policy development on environmental health issues, with a particular emphasis on early-life development. Her research includes evaluating prenatal exposures to environmental chemicals and related adverse pregnancy outcomes, and characterizing developmental risks. She has authored numerous scientific publications and book chapters, and has been quoted widely in the press. The governor of California appointed her in 2012 to the Science Advisory Board of the Developmental and Reproductive Toxicant (DART) Identification Committee.

1. *Environmental Chemicals in Pregnant Women in the United States*, Tracey Woodruff et al, Program on Reproductive Health and the Environment, Environmental Health Perspectives, June 2011.
2. *The Role of Environmental Toxicants in Preterm Birth*, NIH, <https://www.ncbi.nlm.nih.gov/books/NBK11368/>
3. *Why the Toxic Substance Control Act Needs an Overhaul, and How to Strengthen Oversight of Chemicals in the Interim*, SA Vogel and JA Roberts, Health Affairs, 30:898-905, 2011.
4. *Committee Opinion Number 575, Exposure to Toxic Environmental Agents*, ACOG Committee on Health Care for Underserved Women; American Society for Reproductive Medicine Practice Committee; UCSF Program on Reproductive Health and the Environment, October 2013.
5. *Exposure to endocrine-disrupting chemicals in the USA: a population-based disease burden and cost analysis*, *The Lancet Diabetes and Endocrinology Journal*, October 2016.
6. *Counseling Patients on Preventing Prenatal Environmental Exposures: A Mixed Method Study of Obstetricians*, UCSF Program on Reproductive Health and the Environment, June 25, 2014.

For more information, please visit www.mysafetynest.org or contact Alexandra Destler, Founder and Executive Director, SafetyNEST®: Alexandra@mysafetynest.org.