WORLD HEALTH ORGANIZATION

AVOIDABLE EARLY LIFE ENVIRONMENTAL EXPOSURES

GENEVA, SWITZERLAND NOVEMBER 27-28, 2017
WORKING GROUP ON REPRODUCTIVE AND DEVELOPMENTAL ENVIRONMENTAL HEALTH (RDEH)

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International Federation of Gynecology and Obstetrics
FIGO

A professional organisation that brings together obstetrical and gynecological associations from all over the world. FIGO is dedicated to the improvement of women’s health and rights and to the reduction of disparities in healthcare available to women and newborns, as well as to advancing the science and practice of obstetrics and gynecology.

The organisation pursues its mission through advocacy, programmatic activities, capacity strengthening of Member Associations, education and training
AN INVESTMENT IN THE HEALTH OF WOMEN ACROSS THE LIFESPAN IS AN INVESTMENT IN THIS AND FUTURE GENERATIONS...
Where do we begin....

Lead in Lipstick
What is “The Environment”? 
“ENVIRONMENT” Includes:

- Industrial chemicals
- Agricultural chemicals
- Physical agents (heat, radiation)
- By-products of combustion and industrial processes (dioxin)
- Foods and nutrients: **glucose**
- Prescription drugs: **teratogen**
- Lifestyle choices and substance abuse: **alcohol tobacco**
- Social and economic factors
Environmental Exposures

- Every pregnant woman in the U.S. has at least 43 toxic exogenous chemicals in her body
- Virtually all pregnant women have measured levels of lead, mercury, toluene, perchlorate, bisphenol A (BPA)
- Studies have documented that each of these chemicals can be harmful to human reproduction and/or development

78% of obstetricians surveyed feel that they can reduce patient exposure.

Yet.....

<25% report they take an environmental health history.
What Do Obstetricians Ask About?

100%

- Pregnant woman
- Beer

< 20%

- Makeup
- Water bottles

Why?

- "Bigger fish to fry"
- "Wont know what to say"
- "Pandora’s Box"
“Pandora’s Box”

“it’s a little scary barrel to open because I don’t have an answer.”

(Female OB/Gyn)

Stotland 2014
“If I freak out like, ‘Whoa, look at that kid who’s drinking Coke out of a BPA bottle,’ ... which one of those things should I deal with, right?” (Female OB/Gyn)

“bigger fish to fry”
“Bigger fish to fry”

“...they eat at Popeye’s 4 times a week, you have bigger fish to fry than some [environmental exposures]... 
..we don’t have enough information, you know?”

(Female OB/Gyn)

Stotland 2014
Individual Action Alone is Not Enough

MEET MOLLY GRAY.

- Nine pregnant women tested from Washington, Oregon, and California, during the second trimester had detectable:
  - Bisphenol A
  - Mercury
  - At least four phthalates
  - At least two and up to 4 perfluorinated chemicals
Ob-Gyns & Prevention

Ob-Gyns don’t need to be experts in environmental health to provide useful information to patients. However, they should:

- Be familiar with their geographic area
- Take an exposure history early
- Provide information about how the food system affects health
- Communicate the science and areas of uncertainties about environmental exposures

Food Matters: What to Eat?

Your health depends on the food you eat.

The health of communities and the environment we depend on for life are also impacted by how food is grown and how it gets to your dinner plate.

This brochure provides tips for making food choices to protect your health and the health of your family and community.

The brochure also provides many more resources to learn more about how the food we eat impacts our health. For more information, visit: http://www.prhe.ucsf.edu/prhe/foodmatters.html

There are many ways to make a difference. Here are some suggestions to get started.
EVIDENCE MATTERS
How Do We Know Safety of a Chemical?

**Clinical**
- New pharmaceutical developed
- In vitro & in vivo toxicity testing
- Human experimental studies (Randomized Control Trials)
- Enters marketplace
- Post exposure observational studies

**Environmental**
- Chemicals introduced prior to 1976 (N = 62,000)
- New synthetic chemical developed
- Enters marketplace
- Ad hoc post exposure observational studies
- Ad hoc in vitro & in vivo toxicity testing

Limited assessment by EPA
Navigation Guide: A rulebook for “moving from knowing to doing”

By Tracey J. Woodruff, Patrice Sutton, and The Navigation Guide Work Group

An Evidence-Based Medicine Methodology To Bridge The Gap Between Clinical And Environmental Health Sciences

Woodruff & Sutton 2009

ABSTRACT Physicians and other clinicians could help educate patients about hazardous environmental exposures, especially to substances that could affect their reproductive health. But the relevant scientific evidence is voluminous, of variable quality, and largely unfamiliar to health professionals caring for people of childbearing age. To bridge this gap between clinical and environmental health, we created a methodology to...

GRADE
Navigation Guide:
A rulebook for “moving from knowing to doing”

1. Specify Study Question
   Is human environmental exposure to a chemical a reproductive health risk?

2. Select Evidence

3. Rate Quality & Strength of the Evidence:
   Strength of Evidence in Non-Human Systems
   - Sufficient
   - Limited
   - Inadequate
   - Evidence of lack of toxicity
   - Strength of Evidence in Human Systems
   - Known to be Toxic to Human Reproduction
   - Probably Toxic
   - Possibly Toxic
   - Not Classifiable
   - Probably Not Toxic
   Feedback
   No Recommendation needed

4. Grade Strength of Recommendation:
   Strength of Evidence (from Step 3 above)
   - High
   - Medium
   - Lower
   - Known to be Toxic
   - Probably Toxic
   - Possibly Toxic
   - Not Classifiable

   Exposure
   Is a Less Toxic Alternative Available?
   Patient Values and Preferences
   Strong or Discretionary Recommendation

   S = Strong Recommendation
   - denotes “we recommend”
   D = Discretionary Recommendation
   - denotes “we suggest”

1. High Exposure
   - Exposure at any level that occurs during critical or sensitive windows of development or during other periods of heightened vulnerability (i.e., nutritional deficiencies, chronic disease/immunosuppressed state, etc.);
   - Exposure at high level for any duration;
   - Exposure of moderate or low level for long (chronic) duration

2. Medium Exposure
   - Exposure at moderate level for short or intermittent duration

3. Lower Exposure
   - Exposure at low level for short or intermittent duration
Navigation Guide

Steps Along the Way

Human Data

- “PECO” Statement
- Systematic search
- Select Studies
- Extract Data & Data Analysis
- Rate Quality of Evidence
- Rate the Strength of Evidence

Non Human Data

- “PECO” Statement
- Systematic search
- Select Studies
- Extract Data & Data Analysis
- Rate Quality of Evidence
- Rate Strength of Evidence

Overall Conclusion

Populations
Exposures
Comparators
Outcomes
**Conclusion:** Human exposure to PFOA is known to be toxic to human reproduction and development based on sufficient evidence of decreased fetal growth in both human and non-human mammalian species.
ACOG/ASRM Committee Opinion

All exposures are not created equal

Women of reproductive age with occupational exposure to toxic chemicals are highly vulnerable to adverse reproductive health outcomes
Number 575, October 2013

The American College of Obstetricians and Gynecologists Committee on Health Care for Underserved Women
American Society for Reproductive Medicine Practice Committee
The University of California, San Francisco Program on Reproductive Health and the Environment

This Committee Opinion was developed by the American College of Obstetricians and Gynecologists Committee on Health Care for Underserved Women and the American Society for Reproductive Medicine Practice Committee with the assistance of the University of California, San Francisco (UCSF) Program on Reproductive Health and the Environment. The Program on Reproductive Health and the Environment endorses this document. This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. This information should not be construed as dictating an exclusive course of treatment or procedure to be followed.

Exposure to Toxic Environmental Agents

ABSTRACT: Reducing exposure to toxic environmental agents is a critical area of intervention for obstetricians, gynecologists, and other reproductive health care professionals. Patient exposure to toxic environmental chemicals and other stressors is ubiquitous, and preconception and prenatal exposure to toxic environmental agents can have a profound and lasting effect on
Chemical Exposures During Pregnancy: Dealing with Potential, but Unproven, Risks to Child Health

Committee Opinion

Reproductive Health and the Environment

Joint Committee Opinion ACOG/ASRM

October 2013

Committee Opinion

EHP 2016

Perspectives | Brief Communication

Project TENDR: Targeting Environmental Neuro-Developmental Risks. The TENDR Consensus Statement

http://dx.doi.org/10.1289/EHP358
SPECIAL COMMUNICATION

International Federation of Gynecology and Obstetrics opinion on reproductive health impacts of exposure to toxic environmental chemicals

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ARTICLE INFO

Keywords:
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Environmental chemicals
Reproductive environmental health
Toxic chemicals
Women’s health

ABSTRACT

Exposure to toxic environmental chemicals during pregnancy and breastfeeding is ubiquitous and is a threat to healthy human reproduction. There are tens of thousands of chemicals in global commerce, and even small exposures to toxic chemicals during pregnancy can trigger adverse health consequences. Exposure to toxic environmental chemicals and related health outcomes are inequitably distributed within and between countries; universally, the consequences of exposure are disproportionately borne by people with low incomes. Discrimination, other social factors, economic factors, and occupation impact risk of exposure and harm. Documented links between prenatal exposure to environmental chemicals and adverse health outcomes span the life course and include impacts on fertility and pregnancy, neurodevelopment, and cancer. The global health and economic burden related to toxic environmental chemicals is in excess of millions of deaths and billions of dollars every year. On the basis of accumulating robust evidence of exposures and adverse health impacts related to toxic environmental chemicals, the International Federation of Gynecology and Obstetrics (FIGO) joins other leading reproductive health professional societies in calling for timely action to prevent harm. FIGO recommends that reproductive and other health professionals advocate for policies to prevent exposure to toxic environmental chemicals, work to ensure a healthy food system for all, make environmental health part of health care, and champion environmental justice.

© 2015 Published by Elsevier Ireland Ltd. on behalf of International Federation of Gynecology and Obstetrics.
Reproductive and developmental environmental health

Linda Giudice, Tracey Woodruff, Jeanne Conry

Abstract
In 2015, the international community of obstetricians and gynecologists formally recognized the importance of environmental exposures on reproductive health and took critical steps to improve awareness and develop a long term strategy for leaders. First, the International Federation of Gynecology and Obstetrics’ (FIGO) Executive Board adopted an opinion, Reproductive Health Impacts of Exposure to Toxic Environmental Chemicals, and published a special communication to health care providers. FIGO then hosted an international workshop on environmental health and designated a workgroup on Reproductive and Developmental Environmental Health (RDEH). The aim of RDEH is to capture the momentum of the FIGO Opinion and align international leaders around three major objectives: advocacy, education and research with environmental health.
### Critical Windows of Development

#### Step 1: Click the black triangles to read about normal human prenatal development.
- Choose a chemical to see where and when exposure to low doses affects lab animals. Then click the colored triangles for study details.

#### Step 2: Choose a chemical to see where and when exposure to low doses affects lab animals. Then click the colored triangles for study details.

#### TEDX The Endocrine Disruption Exchange – a Treasure Trove of Information on Developmental Disruptors

<table>
<thead>
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<th>First Trimester</th>
<th>Second Trimester</th>
<th>Third Trimester</th>
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#### Key (What the Black Triangles Mean)
- Green: Chemicals/compounds found to be safe or not linked to developmental disruption.
- Yellow: Chemicals/compounds showing potential association with developmental disruption.
- Red: Chemicals/compounds identified as truly disruptive to normal development.

#### TEDX Website
- Link to TEDX Website

#### Low-Dose Chemical Research (Dose Information)
- On/Off All Chemicals
- On/Off Bisphenol A
- On/Off Dioxin
- On/Off Phthalates
- On/Off Chlorpyrifos
- More chemicals...

#### Our Stolen Future
- 1927-2014
Educating Health Professionals and Patients
Recommendation 1: Advocate for policies to prevent exposure to toxic environmental chemicals

Recommendation 2: Work to ensure a healthy food system for all

Recommendation 3: Make environmental health part of health care

Recommendation 4: Champion environmental justice
Working Group on Reproductive and Developmental Environmental Health

- ADVOCACY
- CAPACITY BUILDING AND TRAINING
- COLLABORATIVE RESEARCH
**Advocacy:**
to establish close links with other advocacy groups as well as with other stakeholders such as WHO, UNEP, IPEN, DOHaD

**Training and Capacity Building:**
Develop curricula and training materials to implement FIGO RDEH for all healthcare providers, stakeholders and advocacy groups

Twinning wherein one national association with greater capacity will help another association to increase capacity

**Research:**
research network will be established and identify research centers
Advocacy

• Share current lectures
• Participate in Upcoming Meetings
• Expand global contacts and country focus
• Collaborate with the other work groups
• Identify best practices around advocacy
A research network will be established wherein there will be sharing and transfer of knowledge; and in collaboration with the other two groups efforts made to apply the learning into practice.

- Identify major research centers on RHE around the world
- Produce international consensus-building conference
- RDEH work-group lead partners with country leaders
- Identify research gaps and knowledge gaps
TRAINING AND CAPACITY BUILDING

- Create a repository of talks and pitches that are readily available to members
- Persuade conference organizers to have reproductive and environmental health speakers
- Compile meeting organizer contact information
- Develop a Social Media component
EDUCATION
Environmental Health Education in the US after the IOM report


• Although report has been cited nearly 100 times, little progress has been made
EH Education in US after IOM report:

- The CDC’s ATSDR has published resources (lectures, case studies, with CME credit available) to encourage education & funded a network of PEHSUs to provide clinical support & education nationally
  https://www.atsdr.cdc.gov/emes/health_professionals/index.html

- ATSDR has also helped support *A Story of Health*, an e-book for clinicians on environmental health, with a new chapter on infertility & reproduction  https://wspehsu.ucsf.edu/for-clinical-professionals/training/a-story-of-health-a-multi-media-ebook/
A Story of Health begins with a family reunion that brings you into the lives of fictional people with some of the chronic illnesses that are a serious problem for the health of our nation – asthma, developmental disabilities, cancer, infertility, diabetes, and cognitive decline. Through their stories, you’ll learn the potential causes of these diseases and conditions, and explore prevention strategies.

The stories highlight the many ways our health is affected by the environments where we live, eat, work, play, pray, volunteer, gather and socialize. These stories also illustrate how we can prevent disease and promote health.

This interactive eBook includes colorful illustrations and graphics, videos from health and policy experts, links to numerous resources, and more, to help readers navigate the complex world of health.

A Story of Health is written by health experts, with content relevant to a wide audience, from clinicians, to health advocates, to policy makers.

A Story of Health is a collaboration among the Agency for Toxic Substances and Disease Registry (ATSDR), the Collaborative on Health and the Environment (CHE), the Office of Environmental Health Hazard Assessment.

California Environmental Protection Agency (OEHHA), the Science and Environmental Health Network (SEHN), and the University of California Pediatric Environmental Health Specialty Unit (PEHSU).

Free Continuing Education credits offered through the Centers for Disease Control and Prevention/ATSDR.

For more information contact: Maria Valenti, mvalenti@igc.org or Brian Tencza, bht1@cdc.gov

Download A Story of Health at http://wspehsu.ucsf.edu/a-story-of-health-a-multi-media-ebook/
Pediatric Environmental Health Specialty Unit (PEHSU) Network

- Environmental Health Specialty Units currently w/ pediatric focus
- Joint funding from EPA, ATSDR & academic depts
- Clinical consults, fact sheets, toolkit
- Now required to have reproductive health experts
Efforts to educate medical students

• LCME:
  – Recognize wellness, **determinants of health**, health promotion & disease **prevention**
  – Recognize health-related impacts of behavioral & socioeconomic factors

• APGO:
  – Knowledge of preconception care including ..., **environmental factors**
Efforts to educate OBGYNs

- CREEOG:
  - Counsel regarding general health risk behavior
  - Preconception: assess “risks,” lifestyle modifications
  - Teratogenic effects of medications
  - Assess exposure to toxins if recurrent pregnancy loss

- ABOG: Routine prenatal care
  - Diet; life style; habits; teratogenesis
UCSF REH Education

• 2013, all med students exposed to 1 hour of REH in core curriculum (MS2)
• 2015, medical student elective “Women’s Health, the Environment, & Health Professional Activism” added (10 hours)
• 2017, new curriculum includes additional 8 hours over 1 month of “Inquiry Module” addressing EH (& emphasizing REH) for all medical students
• Reviewing 2nd year curriculum (1000 p) to determine opportunities to embed EH throughout
• REH also available as elective for OB/GYN residents & fellows
Efforts to educate OBGYNs: UCSF

Repro Env Health & Justice Elective rotation
– Uses resources of PEHSU rotation
– For MFM fellows, OBGYN residents

An elective rotation: a month-long block in the context of a 3-year fellowship in MFM or a 4-year residency in OBGYN

1. Curricula:
   1. Didactic training
      • REHU science: precautionary principle, timing of exposures, developmental susceptibilities, mechanisms of metabolism, exposure half-lives, trans-placental passage, etc.
      • Clinical manifestations of reproductive toxicants, i.e., lead, mercury, & endocrine disrupters
   2. Clinical rotation
      • Residents & fellows attend clinics in the Region 9 PEHSU to gain hands-on experience in the diagnosis, management, & education of patients with EH exposures

3. A project to disseminate REHU knowledge.
   For example:
   - Create a training program for prenatal care providers in the local county clinics
   - Use local data to identify areas of the community with the highest risks to target

II. Competencies for MFM fellows:
   1. General competency
   2. Specific to environmental health

ACADEMIC PERSPECTIVE
1) Write grant application (G)
2) Submit study (G)
3) Analyze available data (EH)
4) Collect primary data, analyze the results, & summarize the findings (G)
5) Publish a peer-reviewed article or present at a professional meeting (G)
6) Appropriate the policy implications & formulate recommendations based on clinical & epidemiologic research findings (G)
7) Develop curricula to teach the fundamentals of REHU (EH)
8) Understand the impact of the environment on fetal development & translate that understanding into classroom teaching & research (G)

INDIVIDUAL PATIENT CARE PERSPECTIVE
1) Take an environmental history (EH)
2) Evaluate conditions linked to the environment & understand prenatal exposures that may lead to miscarriages in women of color (EH)
3) Utilize a specialized EH laboratory & interpret results (EH)
4) Report health conditions to the state or local DHW (EH)
5) Develop a plan to reduce a patient’s exposure to environmental contaminants (EH)
6) Evaluate the effectiveness of therapies & methods of reducing environmental exposures (EH)
7) Coordinate community resources to improve a patient’s well-being (EH)
8) Respond to questions about acute exposures from

COMMUNITY ADVOCACY PERSPECTIVE
1) Assess a health problem in a community (EH)
2) Assess an environmental exposure in a community (EH)
3) Communicate environmental risks to community members, school boards, political groups, & other stakeholders (EH)
4) Develop & implement community-based intervention (EH)
5) Evaluate effectiveness of a community intervention (EH)
6) Work as a member of a multidisciplinary team (EH)
7) Develop media literacy as an advocacy tool in promoting environmental health (EH)
8) Interpret legal & regulatory authority, as well as non-regulatory approaches as they relate to reproductive health & the environment (EH)
9) Prepare & present testimony before local, state, & national legislators (EH)

IMPLEMENTATION OF AN REHU ELECTIVE FOR OB/GYN residents & MFM fellows will promote knowledge transfer from the PEHSU to the OB/GYN community & ultimately support improved child health outcomes by extending environmental health competence to reproductive health professionals.

REFERENCES
available at: http://pm.eic.edu/prme/OBGYN6 references.html

FUNDING
Efforts to educate OBGYNs: UCSF

- On every level, progress is made with champions pushing REH into curriculum
  - Adding one slide or one case with REH

- Major curriculum renovation ("Preparing 21st Century Physicians") was an opportunity to add "foundational inquiry" into environmental health/reproduction
  - Champions recruited Dean of Education
Motivating providers

- Data that interventions improve health
- Questions on board exams
- Questions from patients (sometimes)
- Reimbursement (or time)
  - Billing code for time spent on EH counseling
- Electronic medical records
  - Routine ?s
  - “Meaningful use”
Where should we be headed?

- Multi-pronged effort
  - OB providers to teach each other & teach women
  - Research to strengthen case
  - Media to spread awareness
  - Consumer/patients to push government/industry/medicine
  - Governments to regulate industry
COMMUNICATIONS
Case Report: FIGO Earth Day Campaign

The Opportunity: 22 April 2017 - 29 April 2017

- International Earth Day
- March For Science
- People’s Climate March
Medical Stakeholders

International Federation of Gynecology and Obstetrics @FIGOHQ
Medical Society Consortium on Climate Change and Health @docsforclimate
- American Academy of Asthma, Allergy, Immunology @AAAAI_org
- American Academy of Family Physicians @AAFP
- American Academy of Pediatrics @AmerAcadPeds; @AAPNews; #Tweetiatricians
- American Congress of Obstetricians and Gynecologists @ACOGNews; @ACOGAction
- American College of Physicians @ACPinternists
- American College of Preventive Medicine @ACPM_HQ
- American Podiatric Medical Association
- National Medical Association @NationalMedAssn
- Society of General Internal Medicine @SocietyGIM

Project TENDR @projectTENDR
American Public Health Association @PublicHealth
Alliance of Nurses for Healthy Environment #ANHE

International Federation of Fertility Societies @IntFertilitySoc
NGO and Government Stakeholders

EcoAmerica @ecoAmerica
Climate Reality @climatereality
Moms Clean Air Force @CleanAirMoms
Sierra Club @SierraClub
EarthJustice @Earthjustice
Environmental Defense Fund @EnvDefenseFund
Nature Conservancy @nature_org
Climate Progress @climateprogress
United Nations Climate Action @UNFCC
United Nations Environment Program @UNEP
Natural Resources Defense Council @NRDC
Women Engage for a Common Future @WECF_INT
Climate Mayors @ClimateMayors
Roots & Shoots UK @JaneGoodallUK
Hashtags
#EarthDay
#MarchForScience
#HealthNotToxics
#HealthandClimate

Key Influencers
Al Gore @algore
Leonardo DiCaprio @LeoDiCaprio
Neil deGrasse Tyson @neiltyson
Bill Nye @BillNye
Jane Goodall @JaneGoodallInst
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<td>Earth Day, March For Science</td>
<td>22 April 2017</td>
<td>1 day</td>
</tr>
</tbody>
</table>
# Twitter Content: Clean Air

17 April 2017

<table>
<thead>
<tr>
<th>Twitter Copy</th>
<th>Hashtags</th>
</tr>
</thead>
<tbody>
<tr>
<td>A healthy pregnancy starts w/ clean air, clean water, and no toxic chemicals</td>
<td>#EarthDay</td>
</tr>
<tr>
<td>There is no “safe dose” of toxics, such as air pollution, for pregnant women or anyone</td>
<td>#HealthandClimate</td>
</tr>
<tr>
<td>Scientists agree: air pollution has toxic effects on the developing brain during pregnancy [ProjectTENDR consensus statement]</td>
<td>#HealthNOTToxic</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Air pollution can increase your risk for a premature baby [EHP: Tressande, 2016]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>OB/GYN’s around the world agree: air pollution puts your pregnancy at risk <a href="http://bit.ly/1O9ZTwG">http://bit.ly/1O9ZTwG</a></td>
<td></td>
</tr>
</tbody>
</table>
### Twitter Content: Clean Water

18 April 2017

<table>
<thead>
<tr>
<th>Twitter Copy</th>
<th>Hashtags</th>
</tr>
</thead>
</table>
| A healthy pregnancy starts w/ clean air, clean water, and no toxic chemicals | #EarthDay
| There is no “safe dose” of toxics, such as polluted water, for pregnant women or anyone | #HealthNOTToxicS       |
| Toxics in water, air and food can lead to babies being born “pre-polluted”   |                        |
| [infographic]                                                               |                        |
| Salinity in drinking water linked to high blood pressure in pregnancy, preeclampsia; worsened by rising sea levels | http://bit.ly/2oOTtNJ   |
| [Kahn 2014]                                                                 |                        |
| FIGO advocates that everyone have drinking water free of toxic chemicals     |                        |
## Twitter Content: Toxic Chemicals

19 April 2017

<table>
<thead>
<tr>
<th>Twitter Copy</th>
<th>Hashtags</th>
</tr>
</thead>
<tbody>
<tr>
<td>A healthy pregnancy starts w/ clean air, clean water, and no toxic chemicals</td>
<td>#EarthDay</td>
</tr>
<tr>
<td>There is no “safe dose” of toxics, such as chlorpyrifos, for pregnant women</td>
<td>#HealthNOTToxic</td>
</tr>
<tr>
<td>There is no “safe dose” of toxics, such as organophosphate pesticides, for pregnant women</td>
<td></td>
</tr>
<tr>
<td>Toxic chemical solvents increase the risk of pregnancy loss</td>
<td></td>
</tr>
<tr>
<td>Pregnancies exposed to pesticides, like chlorpyrifos, can hurt babies’ brain development</td>
<td></td>
</tr>
<tr>
<td>Toxics, like PCBs, can increase the risk for breast cancer</td>
<td></td>
</tr>
<tr>
<td>Exposure to environmental toxics happens every day, all over the world, and harms healthy human reproduction</td>
<td></td>
</tr>
</tbody>
</table>
## Twitter Content: Extreme Climate

**20 April 2017**

<table>
<thead>
<tr>
<th>Twitter Copy</th>
<th>Hashtags</th>
</tr>
</thead>
<tbody>
<tr>
<td>A healthy pregnancy starts with clean air, clean water, and no toxic chemicals</td>
<td>#EarthDay</td>
</tr>
<tr>
<td>Extreme heat during pregnancy = 31% increase in low birthweight babies &lt; 5.5 lb</td>
<td>#HealthandClimate</td>
</tr>
<tr>
<td>Extreme temperatures increase insects number and range: Zika-carrying mosquitos infected 1,500 US pregnant women</td>
<td></td>
</tr>
<tr>
<td>Extreme temperatures increase insects number and range: Zika-carrying mosquitos infected 165,000 pregnant women worldwide</td>
<td></td>
</tr>
<tr>
<td>Climate change is making mothers &amp; babies sick: infection, mental illness, heat-stress, malnutrition, asthma</td>
<td></td>
</tr>
<tr>
<td>Under-resourced populations, indigenous peoples, children, pregnant women, persons with disabilities: most at risk with climate change</td>
<td></td>
</tr>
</tbody>
</table>
## Twitter Content: Extreme Climate

20 April 2017

<table>
<thead>
<tr>
<th>Twitter Copy</th>
<th>Hashtags</th>
</tr>
</thead>
<tbody>
<tr>
<td>A healthy pregnancy starts w/ clean air, clean water, and no toxic chemicals</td>
<td>#EarthDay</td>
</tr>
<tr>
<td>Extreme heat during pregnancy = 31% increase in low birthweight babies &lt; 5.5 lb</td>
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<tr>
<td>Extreme temperatures increase insects number and range: Zika-carrying mosquitos infected 165,000 pregnant women worldwide</td>
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<tr>
<td>Climate change is making mothers &amp; babies sick: infection, mental illness, heat-stress, malnutrition, asthma</td>
<td></td>
</tr>
<tr>
<td>Under-resourced populations, indigenous peoples, children, pregnant women, persons w/ disabilities: most at risk with climate change</td>
<td></td>
</tr>
</tbody>
</table>
FIGO Earth Day Campaign

Why don't you come by again for a whole new menu just for you?
Twitter Analytics: High Level

Profile Visits @FIGOHQ: 3,343
Views (Impressions)
Total views: 47,200
Average views per day: 7,900
Max views per day: 10,452 (Toxic Chemicals)

Tweets
Total tweets: 97
Average tweets per day: 16
Max tweets per day: 24 (Toxic Chemicals)

Retweets
Total retweets: 361
Average retweets per day: 60
Max retweets per day: 83 (Clean Water)

Engagement
Engagement rate: 3.9%
Max engagement rate: 4.8% (Earth Day)

Link Clicks: includes link to FIGO document, other publications
Total link clicks: 106
Average link clicks per day: 18
Max link clicks: 26 (Toxic Chemicals); 25 (Earth Day)

Followers
New followers of @FIGOHQ: 167*
* New followers in May 2017: 1,652 (likely related to campaign post 22 April 2017)
<table>
<thead>
<tr>
<th>Tweets</th>
<th>Top Tweets</th>
<th>Promoted</th>
<th>Impressions</th>
<th>Engagements</th>
<th>Engagement rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIGO @FiGOHQ · Apr 18</td>
<td><img src="FIGO.png" alt="FIGO" /></td>
<td>There is no “safe dose” of toxics, such as polluted water, for pregnant women or anyone #EarthDay #HealthNOTToxics pic.twitter.com/wETpJ5B6Oh</td>
<td>5,463</td>
<td>173</td>
<td>3.2%</td>
</tr>
<tr>
<td>FIGO @FiGOHQ · Apr 17</td>
<td><img src="FIGO.png" alt="FIGO" /></td>
<td>This week, in honor of #EarthDay, we will be tweeting about how the environment affects the health of pregnancy, children, and families</td>
<td>5,409</td>
<td>82</td>
<td>1.5%</td>
</tr>
<tr>
<td>FIGO @FiGOHQ · Apr 17</td>
<td><img src="FIGO.png" alt="FIGO" /></td>
<td>OB/GYN’s around the world agree: air pollution puts your pregnancy at risk #EarthDay #HealthNOTToxics bit.ly/1O9ZTwG</td>
<td>3,069</td>
<td>68</td>
<td>2.2%</td>
</tr>
<tr>
<td>FIGO @FiGOHQ · Apr 20</td>
<td><img src="FIGO.png" alt="FIGO" /></td>
<td>Extreme heat during pregnancy = 31% increase in low birthweight babies &lt; 5.5 lb #EarthDay #HealthandClimate #climatechangeshealth</td>
<td>3,023</td>
<td>38</td>
<td>1.3%</td>
</tr>
<tr>
<td>FIGO @FiGOHQ · Apr 21</td>
<td><img src="FIGO.png" alt="FIGO" /></td>
<td>This #EarthDay ACOG President calls upon Ob/Gyn’s to be Champions of Environmental Science @obgynmaster @acognews bit.ly/2p475nw</td>
<td>2,895</td>
<td>55</td>
<td>1.9%</td>
</tr>
</tbody>
</table>
## Campaign Schedule: 17 April 2017 - 22 April 2017

<table>
<thead>
<tr>
<th>Description</th>
<th>Date</th>
<th>Views</th>
<th>Tweets</th>
<th>Retweets</th>
<th>Link Clicks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean Air</td>
<td>17 April 2017</td>
<td>4,079</td>
<td>10</td>
<td>34</td>
<td>2</td>
</tr>
<tr>
<td>Clean Water</td>
<td>18 April 2017</td>
<td>9,090</td>
<td>9</td>
<td>83</td>
<td>20</td>
</tr>
<tr>
<td>Toxic Chemicals</td>
<td>19 April 2017</td>
<td>10,452</td>
<td>24</td>
<td>61</td>
<td>26</td>
</tr>
<tr>
<td>Extreme Climate</td>
<td>20 April 2017</td>
<td>9,645</td>
<td>20</td>
<td>55</td>
<td>14</td>
</tr>
<tr>
<td>Earth Day build up</td>
<td>21 April 2017</td>
<td>8,623</td>
<td>21</td>
<td>83</td>
<td>19</td>
</tr>
<tr>
<td>Earth Day, March For Science</td>
<td>22 April 2017</td>
<td>5,268</td>
<td>13</td>
<td>45</td>
<td>25</td>
</tr>
</tbody>
</table>
Engagements
Showing 7 days with daily frequency

Engagement rate
3.7%

2.4% engagement rate

Link clicks
108

On average, you earned 15 link clicks per day

Retweets
364

On average, you earned 52 Retweets per day

Likes
436

On average, you earned 62 likes per day
Twitter Analytics: Graphics

Your Tweets earned **47.2K impressions** over this **6 day** period

<table>
<thead>
<tr>
<th>Clean Air</th>
<th>Clean Water</th>
<th>Toxic Chemicals</th>
<th>Extreme Climate</th>
<th>Build-up</th>
<th>Earth Day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>20.0K</strong></td>
<td><strong>10.0K</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>20</strong></td>
<td><strong>10</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Wednesday, April 19, 2017**
- Organic Impressions: 10,452
- Tweets: 24
Your Tweets earned **52.6K impressions** over this **31 day** period.
Your Tweets earned **74.3K impressions** over this **31 day** period
Top media Tweet e

FIGO leader @ConryJean speaks at #APHA2017 on risk of climate change to women’s life-course @PublicHealth @acognews @docsforclimate pic.twitter.com/kq9bUZ8oxY

Top Tweet earned 3,801 impressions

Bruce Bekkar @thgreendoc speaks at #APHA2017 on risk of climate change to women’s life-course @PublicHealth @acognews @docsforclimate pic.twitter.com/kq9bUZ8oxY

Impacts of Climate Change on Women’s Health across their Lifecycle

Bruce Bekkar, M.D.
Pam Bass, Ph.D., M.P.H., California E.P.A./O.E.H.H.A.
Roberta Dettico, M.D., George Washington University School of Medicine
Susan Orton, M.D., P.A.A.F.P., University of Texas
Lisa Van Susteren, M.D.
Anda Lao, M.A.
M.H. Kivel, Ph.D., M.P.H., Graduate School of Public Health, San Diego State University
FIGO joins IDF in highlighting World Diabetes Day 2017! bit.ly/2iTADz @IntDiabetesFed @WDD

FIGO leader @ConnyJeanne speaks on reproductive health and the environment at #FLASOG 2017 #healthnotoxics @acognews @FLASOG2017 pic.twitter.com/dxo3czEUBi

Bruce Bekkar @thgreendoc speaks at #APHA2017 on risk of climate change to women's life-course @PublicHealth @acognews @docsforclimate pic.twitter.com/kq9bUZBQxY

This week American Public Health Association @PublicHealth hosts annual conference: Creating the Healthiest Nation: Climate Changes Health goo.gl/EF1V1c #climatechange @acognews @docsforclimate

FIGO’s Violence Against Women WG speaking to press to advocate for more awareness of this important issue
Your current follower audience size is 2,182. That's 91 more than the same time 30 days ago. You've gained around 3 new followers per day.
Gender

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>39%</td>
<td>61%</td>
</tr>
</tbody>
</table>

Age

<table>
<thead>
<tr>
<th>Age category</th>
<th>% of audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 to 17</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>18 to 24</td>
<td>18%</td>
</tr>
<tr>
<td>25 to 34</td>
<td>46%</td>
</tr>
<tr>
<td>35 to 44</td>
<td>24%</td>
</tr>
<tr>
<td>45 to 54</td>
<td>8%</td>
</tr>
<tr>
<td>55 to 64</td>
<td>2%</td>
</tr>
<tr>
<td>over 65</td>
<td>1%</td>
</tr>
</tbody>
</table>
### Country

<table>
<thead>
<tr>
<th>Country name</th>
<th>% of audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>39%</td>
</tr>
<tr>
<td>Mexico</td>
<td>7%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>7%</td>
</tr>
<tr>
<td>Nigeria</td>
<td>4%</td>
</tr>
<tr>
<td>Canada</td>
<td>4%</td>
</tr>
<tr>
<td>Turkey</td>
<td>3%</td>
</tr>
<tr>
<td>Spain</td>
<td>3%</td>
</tr>
<tr>
<td>Kenya</td>
<td>3%</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>2%</td>
</tr>
<tr>
<td>India</td>
<td>2%</td>
</tr>
</tbody>
</table>

### Occupation

<table>
<thead>
<tr>
<th>Occupation type</th>
<th>% of audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional/technical</td>
<td>45%</td>
</tr>
<tr>
<td>Health services</td>
<td>29%</td>
</tr>
<tr>
<td>Homemaker</td>
<td>17%</td>
</tr>
<tr>
<td>White collar worker</td>
<td>14%</td>
</tr>
<tr>
<td>Retired</td>
<td>12%</td>
</tr>
<tr>
<td>Self-employed</td>
<td>12%</td>
</tr>
<tr>
<td>Management</td>
<td>12%</td>
</tr>
<tr>
<td>Sales/marketing</td>
<td>8%</td>
</tr>
<tr>
<td>Student</td>
<td>5%</td>
</tr>
<tr>
<td>Trademan/laborer</td>
<td>5%</td>
</tr>
</tbody>
</table>

Values based on 10.4% match rate from Twitter partners

### Languages

<table>
<thead>
<tr>
<th>Language</th>
<th>% of audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>86%</td>
</tr>
<tr>
<td>Spanish</td>
<td>18%</td>
</tr>
<tr>
<td>Turkish</td>
<td>3%</td>
</tr>
<tr>
<td>Arabic</td>
<td>3%</td>
</tr>
<tr>
<td>French</td>
<td>2%</td>
</tr>
</tbody>
</table>
GLOBAL ECONOMIC OUTLOOK

Young people...
Think climate change and the destruction of nature is the most critical issue.

Over 90% of young people agree or strongly agree that Humans are responsible for climate change.

Most serious global issues.

- Climate Change
  - Destruction of Nature: 48.8%
- Large Scale Conflicts/Wars: 38.9%
- Inequality: 30.8%

Humans are responsible for climate change.

- Strongly Disagree: 0.9%
- Somewhat Disagree: 1.7%
- Neither: 6.1%
- Somewhat Agree: 21.7%
- Strongly Agree: 69.8%

24,270 and 23,737 respondents

Global Shapers Annual Survey. #shapersurvey
Selected Highlights: Thanked by March for Science

FIGO @FIGOHQ · 4/21/17
Ob/Gyn's from 125 countries say: exposure to toxic chemicals in the air, water, and food supply is damaging your health @ScienceMarchDC

1 Like
This #EarthDay ACOG President calls upon Ob/Gyn's to be Champions of Environmental Science
@obgynmaster @acognews

This Earth Day be a Champion for Environmental Science
acogpresident.org

4/21/17, 2:06 PM

View Tweet activity

11 Retweets 14 Likes
Dr. D @NDeNicolaMD · 4/22/17
Join us! @algore @LeoDiCaprio @neiltyson @BillNye @JaneGoodallInst

FIGO @FIGOHQ
This #EarthDay, see why Ob/Gyn’s around the world are speaking up about avoiding toxic chemicals bit.ly/2owACCZ #MarchForScience

JaneGoodallInstitute @JaneGoodallInst
Official Twitter of Dr. Jane Goodall & the Jane Goodall Institute. Facebook: facebook.com/janegoodall & facebook.com/janegoodallinst. Follow @rootsandshoots

1.3 M
@acognews
@figohq
@ndenicolamdn
KEY MESSAGES
There is no “safe dose” of toxics for pregnant women, or anyone.
-preventing exposures to environmental toxics is a priority for reproductive health professionals everywhere
-

Pregnancies exposed to pesticides, like chlorpyrifos, can hurt brain development
-food is a major pathway of exposure to toxic environmental chemicals

OBGYNs around the world agree: air pollution puts your pregnancy at risk
-increases the risk of pregnancy loss, low birth weight and preterm babies
-has toxic effects on the developing brain during pregnancy
Toxics in water, air and food can lead to babies being born “pre-polluted”
- virtually every woman has over forty toxic chemicals in her body

Workplace matters because exposure to solvents, pesticides and other toxic chemicals can increase the risk of miscarriage

Healthy pregnancies start with clean air, clean water and no toxic chemicals
- pregnancy is a vulnerable window of development
- environmental factors in pregnancy have a long term impact on children

Climate change/global warming
- extreme heat during pregnancy increases the rate of low birth rate babies
- increases the range and abundance of insects
- Zika carrying mosquitoes infected 165000 pregnant women in 2016

Toxic chemicals get into the body by breathing, eating, drinking or across the skin. These chemicals can also cross the placenta
- persistent organic pollutants and metals are found in breastmilk of women around the world