If endocrine disruptors promote obesity, what should we do?

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Over 30 years and over 200 national and international policy documents... but no really successful strategies to reduce obesity prevalence
Over 650 papers in PubMed specifically on EDCs and obesity/adiposity since 2000, and over 200 reviews/meta-analyses

EDCs can act to …
• stimulate appetite
• block satiation
• enhance adipocyte formation
• enhance lipid storage

EDCs act outside the ‘calories-in-calories-out’ model assumed in governmental policies and strategies for obesity prevention.
Two questions:

1. Are EDCs’ obesogenic effects significant vs other recognised risk factors?

and

2. What policies should we recommend?
1. Are EDC effects significant *vs* well-recognised risk factors?

- Children TV watching: increased odds 13% per hour watched /day
- Maternal obesity: up to 20% increased risk of obesity in child
- Unhealthy diets: increased risk 5% - 14%
- Soda consumption: 12-15% increased risk of obesity per 200ml or 250ml /day
  
  *[Diet soda consumption: 21% increased risk obesity per 250ml /day ]*

EDCs meta-analyses

- Children (USA): Lowest quartile urinary BPA = 10% obesity prevalence, all higher quartiles for BPA had 17-23% obesity prevalence
- Every 1ng/ml urinary BPA increased odds of obesity 15% (adults), 17% (children) -- [US population range >1ng/ml to >10ng/ml]

**Conclude:** EDC effects are non-trivial, but a formal attempt to estimate the attributable fractions is badly needed.
2. What policies should we recommend?

63 systematic reviews with applicable recommendations (excluding ‘more research needed’). Three types of recommendation:

1. **Individual action**: Personal choice, advice to patients, public awareness raising (suggested in 26 reviews)

2. **Medical interventions**: Treatments to counter EDCs, testing for genetic susceptibility (suggested in 11 reviews)

3. **Population-level interventions**: Regulation, chemical risk assessments and restricted product licensing (suggested in 42 reviews)
2. What policies should we recommend?

1. **Individual action**: Personal choice, advice to patients, public awareness raising (suggested in 26 reviews)

   *Cannot avoid invisible obesogens, passes responsibility to victims, increases potential stigma*

2. **Medical interventions**: Treatments to counter EDCs, testing for genetic susceptibility (suggested in 11 reviews)

   *Testing for EDC effects on patients not easily available, no EDC-specific treatment regimes?*

3. **Population-level interventions**: Regulation, chemical risk assessments and restricted product licensing (suggested in 42 reviews)
60 major policy documents for obesity policies and strategies 2010 – 2020

Two that nod in the right direction but make no specific recommendations:

• WHO Commission on Ending Childhood Obesity (2016) ‘... maternal hyperglycaemia, smoking or exposure to toxins can increase the likelihood of obesity...’

• CDC Adult Obesity Causes and Consequences (2020) ‘Research continues on the role of other factors in energy balance and weight gain such as chemical exposures...’
United Nations **Sustainable Development Goals** have several targets for polluting chemical impact in health, in cities, in marine ecosystems, but not obesity. In fact *the SDGs have very little to say about obesity at all*.

A serious policy gap – and an opportunity to link **obesity prevention** with **environmental improvements**: i.e. obesity prevention and ...  
- Reduced agro-chemical use  
- Reduced petro-chemical fuel use  
- Reduced plastic use  
- Clean water supplies
What do we need for policy development?

Convincing facts

• Robust assessment of *attributable fraction* ranking EDCs against other obesogens (EDCs singly and in combination...)

• Identification of the *most potent and widespread* EDC obesogens (where is the greatest risk arising: food, traffic, water...?)
What do we need for policy development?

Followed by

• Stronger and more frequent statements from professional bodies
• Citizen demands for labelling of products containing EDC-obesogens
• (USA) Citizen or DA legal threats to major EDC producers
• International collaboration and regulation: the Stockholm Convention on Persistent Organic Pollutants (USA not signed)
Thankyou

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