



National Toxics Network Australia

Contaminants in Marine Plastics

2016

Dr Mariann Lloyd – Smith
Jo Immig

Plastics and Chemicals Industry

- “The building blocks of a modern economy”
- “Critical Industry enabler”



A new toxic time bomb

- Global transport of PBTs
- Microplastics: *Plastic pellets, ropes, Nets, Microbeads, Synthetic fabric*
- Nanoparticles (engineered)
- Surface area to volume ratio
- PCB, DDT, Lindane, BPA, BFR
- Phthalates, EDC, PFC, PAH



Types of plastics and additives

Toxicity of plastics associated with:

- Residual monomers
- Intermediaries
- POPs

Additives

- Plasticizers
- Flame retardants
- Stabilisers
- Curing agents
- Colourants

Persistent Organic Pollutants

- PCB
- DDT
- HCH
- HCB
- PFC
- PBDE



When ingested by marine species, the contaminated plastics provide a clear route by which POPs can enter the marine food web.

International Pellet Watch

Foul Bay Western Australia

Chemical	Foul Bay test	Range of levels recorded by International Pellet Watch
PCBs	20ng/g-pellet	7 to 486ng/g-pellet
DDT	9ng/g-pellet	3 to 323ng/g-pellet
PAHs	0.4ng/g-pellet	0.2 to 15ng/g-pellet
Hopanes	14ng/g-pellet	2 to 49 ng/g-pellet
HCH	<0.2ng/g-pellet	0.1 to 37 ng/g-pellet

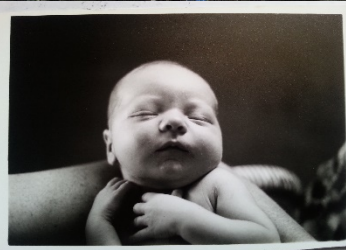
Levels of pollutants in other microplastics

- 2014 Norwegian Institute for Water Research
- Pesticides:
DDT, HCH, Chlordanes, Cy clodienes, Mirex, HCB
- Industrial Chemicals and additives:
PCBs, PBDE, BPA, PFCs, Phe nols
- Byproducts:
PAHs, Aliphatic hydrocarbons



Plastic Marine Pollution: a cross sector issue

-needs a cross sector response-



UNITY

COLLABORATION

TRUST

SUPPORT

RESPECT

STRENGTH

DETERMINATION

HOPE