SUMMARY of newly published scientific evidence in 2017 with relevance to environmental and/or occupational risk for breast cancer. This is not an exhaustive list, but a useful guide to important new information & research. For links to more papers please visit:

https://frompinktoprevention.org/resources/scientific-evidence/

THE LANCET COMMISSION ON POLLUTION (Oct 2017)

http://www.thelancet.com/commissions/pollution-and-health

The Report from The Lancet Commission on Pollution and Health analyzes and communicates the massive scope of the health and economic costs of air, water and soil pollution.

Chemical pollution is a great and growing global problem. The effects of chemical pollution on human health are poorly defined and its contribution to the global burden of disease is almost certainly underestimated. More than 140000 new chemicals and pesticides have been synthesised since 1950. Of these materials, the 5000 that are produced in greatest volume have become widely dispersed in the environment and are responsible for nearly universal human exposure. Fewer than half of these high-production volume chemicals have undergone any testing for safety or toxicity, and rigorous pre-market evaluation of new chemicals has become mandatory in only the past decade and in only a few high-countries. The result is that chemicals and pesticides whose effects on human health and the environment were never examined have repeatedly been responsible for episodes of disease, death, and environmental degradation.

Historical examples include lead, asbestos, dichlorodiphenyltrichloroethane (DDT), polychlorinated biphenyls (PCBs), and the ozone- destroying chlorofluorocarbons. Newer synthetic chemicals that have entered world markets in the past 2–3 decades and that, like their predecessors, have undergone little pre-market evaluation threaten to repeat this history. They include developmental neurotoxicants, endocrine disruptors, chemical herbicides, novel insecticides, pharmaceutical wastes, and nanomaterials. Evidence for the capacity of these emerging chemical pollutants to cause harm to human health and the environment is beginning to become evident.

These emerging chemicals are of great concern, and this concern is heightened by the increasing movement of chemical production to low-income and middle-income countries public health and environmental protections are often scant. Most future growth in chemical production will occur in

these countries. A further dimension of pollution is the global archipelago of contaminated hot-spots: cities and communities, homes, schoolyards polluted by toxic chemicals, radionuclides, heavy metals released into air, water, and soil by active and abandoned factories, smelters, mines, and hazardous waste sites

THE LANCET: CANCER, ENVIRONMENT AND PREVENTION (May 2017)
(http://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(17)30268-1/fulltext

A Lancet report of the annual American Association of Cancer Research conference. 'Cancer is a product of both nature and nurture, in which environmental risk is an equally crucial—and often neglected—factor because it is a multi-sectorial issue….can this insatiable desire to enhance our fundamental understanding of tumour biology overshadow the health gains that could be secured by improved environmental protection? To eradicate cancer, governments need to both identify and act not only on increased risk susceptibility, but also ensure that people are not exposed to carcinogenic materials through gross environmental mismanagement.

BREAST CANCER PREVENTION PARTNERS : STATE OF EVIDENCE REVIEW (summer 2017)

https://www.bcpp.org/resource/state-evidence-2017/ Published in the journal *Environmental Health*, the continually expanding and increasingly compelling data linking radiation and various chemicals in our environment to the current high incidence of breast cancer is reviewed.

Abstract: Singly and in combination, these toxicants may have contributed significantly to the increasing rates of breast cancer observed over the past several decades. Exposures early in development from gestation through adolescence and early adulthood are particularly of concern as they re-shape the program of genetic, epigenetic, and physiological processes in the developing mammary system, leading to an increased risk for developing breast cancer. The evidence cited in this review reinforces the conclusion that exposures to a wide variety of toxicants – many of which are found in common, everyday products and by-products – can lead to increased risk for development of breast cancer. The evidence is in 7 major areas:
Hormones: Pharmaceutical agents & personal care products
Endocrine disrupting compounds (EDCs)
Hormones in food: Natural and additives
Non-EDC industrial chemicals
Tobacco smoking: Active and passive
Shift work, light-at-night and melatonin
Radiation
As concluded by the reports of the Presidential Cancer Panel and the Interagency Breast Cancer and Environmental Research Coordinating Committee, it is critical to recognize the growing literature demonstrating connections between exposures to environmental toxicants and later development of disease, including breast cancer, and to prioritize prevention both at the research and the public health levels.

SILENT SPRING INSTITUTE: CHEMICALS & HOUSEHOLD DUST **(summer 2017)**
http://www.sciencedirect.com/science/article/pii/S0013935117307971

Environmental chemicals and breast cancer: An updated review of epidemiological literature

Exposure to certain chemicals in household and industrial products is a significant risk factor for breast cancer, especially when the exposure occurs at an early age. Silent Spring Institute scientists have been studying the link between breast cancer and environmental exposures—to chemicals in the air we breathe, the food we eat, and the products we use on a daily basis—for many years. In 2007, a widely cited review from the Silent Spring Institute identified 216 such chemicals that cause mammary tumors in animals, providing a roadmap for future studies in humans. A decade later, Silent Spring scientists have published an update in the journal *Environmental Research*, and they say that the evidence today—including documented effects in people of all ages—is stronger than ever.

http://www.chemtrust.org/dust-not-only-a-nuisance-but-also-a-source-of-hazardous-chemicals/?utm_content=buffer953b6&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer Dust-Not only a nuisance, but also a source of hazardous chemicals eg BFRs from furniture, phthalates from plastic We spend up to 90% of time in our homes, our offices or at school. However, studies show that indoor air can be more polluted and therefore worse for our health than air outdoors, as indoor air and dust can contain a number of worrying harmful chemical pollutants. Children, particularly babies and toddlers playing on floors, are specifically vulnerable to ingesting these pollutants through breathing in or eating dust. Chemicals of concern include flame retardants, plasticisers and non-stick and water-proofing chemicals. Many are toxic and some are persistent (do not break down) and bio-accumulative (increase in concentration in our bodies and we do not tend to excrete them)'

http://www.telegraph.co.uk/news/2017/07/12/household-dust-makes-people-fat-groundbreaking-research-indicates/A pioneering study in the US revealed that normal house dust is capable of carrying hormone-altering chemicals that prompt cells in the body to accumulate fat. The dust particles were found to contain endocrine-disrupting chemicals (EDCs), synthetic or naturally occurring compounds that can interfere with or mimic the body's hormones. These include flame retardants in sofas and carpets, as well as phthalates, substances added to plastics to increase their flexibility.

BREXIT, UK BUSINESS & EU CHEMICALS REGULATION http://www.chemtrust.org/ (April 2017)

UK manufacturing industry: Brexit threatens businesses unless UK stays in EU chemical regulations. A wide range of stakeholders, including companies, politicians, the UK government and NGOs, gathered (29.9.17) to discuss Brexit's impact on future chemicals. The overwhelming conclusion was that the UK should aim to stay in the EU's main chemicals regulation REACH after Brexit, as otherwise supply chains would be disrupted, costs for UK industry would increase and public health and environment quality in the UK would be threatened.

http://www.chemtrust.org/eac-brexit-reach-report/ (April 2017)

MPs call for post-Brexit UK to remain as close as possible to EU's main chemicals law REACH
The UK House of Commons Environmental Audit Committee (EAC) published the report of its inquiry on chemicals regulation after the EU referendum, which particularly focussed on the EU's world-leading REACH system for regulating chemicals. The EAC criticise the UK Government's lack of openness about its post-Brexit plans, and point out that most respondents want the UK to remain '*as closely aligned to REACH as possible*'.

PAPER TILL RECEIPTS https://chemicalwatch.com/register?o=37103&productID=1&layout=main

US researchers have shown that handling till receipts can contribute to workers' exposure to three compounds, used as developers in thermal papers. They conclude that thermal receipt paper is a potential source of occupational exposure to BPA, BPS and BPSIP. However, they say the results also raise questions on whether the latter may be "more environmentally persistent", "less readily cleared from the body" and "more widespread" than assumed.

http://chemsec.org/why-keeping-the-uk-in-reach-is-the-best-option-post-brexit/ (Oct 2017)

The EU has agreed to ban the use of the endocrine disruptor Bisphenol A (BPA) in thermal paper till receipts by 2020. We all handle till receipts. And how many handled by cashiers every day, every week? Leaving the EU regulation will impact this. "The UK Government is currently proposing to set up a duplicate of the REACH system. This is likely to mean that companies would have to register chemicals in both the UK and in the normal EU REACH system, thus creating extra work" Chemsec

DRINKING WATER, PLASTICS & CHEMICAL INTAKE (Sept 2017)

https://www.theguardian.com/environment/2017/sep/06/plastic-fibres-found-tap-water-around-world-study-reveals Tests show billions of people globally are drinking water contaminated by plastic particles, with 83% of samples found to be polluted

The US had the highest contamination rate, at 94%, with plastic fibres found in tap water sampled at sites including Congress buildings, the US Environmental Protection Agency's headquarters, and Trump Tower in New York. Lebanon and India had the next highest rates. European nations including the UK, Germany and France the lowest but still high at 72%.

Microplastics are also known to contain and absorb toxic chemicals and research on wild animals shows they are released in the body. Prof Richard Thompson, at Plymouth University, UK, told Orb: "It became clear very early on that the plastic would release those chemicals and that actually, the conditions in the gut would facilitate really quite rapid release." His research has shown microplastics are found in a third of fish caught in the UK.

PESTICIDES, FRUIT & VEG and FORMATIVE CHILD EXPOSURES (Oct 2017)

http://www.pan-uk.org/food-for-thought/ Pesticides Action Network

A new report launched by Pesticide Action Network UK (PAN UK) reveals that the fruit and vegetables given out to four-to-six year olds via a government scheme aimed at promoting healthy eating habits contained residues of 123 different pesticides. These include suspected endocrine disruptors which interfere with hormone systems, known carcinogens, and organophosphates that can negatively affect children's cognitive development. In many cases, multiple residues were found on the produce. This is another area of serious concern as the scientific community has little understanding about the complex interaction of different chemicals in what is termed the 'cocktail' effect.

http://www.pan-uk.org/site/wp-content/uploads/Food_For_Thought_Press_Release_FINAL.pdf

For an additional cost of roughly 1p per child per day, or £5.6 million per year, all of the core produce given out through the Department of Health's School Fruit and Vegetables Scheme could be switched to organic. Not only would this better protect children's health, it would also provide much-needed support to the British organic sector. The full list of the 123 pesticides is available on PAN UK's website along with spreadsheets containing all other original data and the complete 'Food for Thought' report. Visit www.panuk.org/food-for-thought.

THREE QUARTERS OF ALL HONEY CONTAINS HARMFUL PESTICIDES (Oct 2017)

http://www.dailymail.co.uk/sciencetech/article-4952858/Three-quarters-honey-contains-harmful-pesticides.html

Three quarters of samples were laced with at least one neonicotinoid chemical Neonicotinoids are neuro-active chemicals that can attack the nervous system. One scientist warned that it was impossible to predict the long term effects
Experts called the findings 'sobering' and a 'serious environmental concern'. Dave Goulson, Professor of Biology at the University of Sussex, said: 'Beyond doubt ... anyone regularly eating honey is likely to be getting a small dose of mixed neurotoxins

UN SPECIAL RAPPORTEUR ON HUMAN RIGHTS AND HAZARDOUS SUBSTANCES AND WASTES
UK January 2017 with full report here

https://www.theguardian.com/environment/2017/sep/10/uk-flouting-duty-to-cut-air-pollution-deaths-says-un-human-rights-report Britain flouting duty to protect citizens from toxic air pollution – UN Special rapporteur's mission finds government has violated obligation to protect people's lives and health. The UN's Baskut Tuncak warned that unless the UK's future green standards equalled those of the European Union, "the UK could risk becoming a haven for 'dirty' industries and a dumping ground for products failing to meet EU regulations