

# Breast Cancer *and* Environmental Risks

- do New Zealand levels of endocrine disrupting chemicals initiate or promote breast cancer?

21 July 2012

## SEMINAR HANDBOOK

**Dr Barbara Cohn**  
*Public Health Institute,  
Berkeley, CA, USA*

**Professor Charlotte Paul**  
University of Otago

**Professor Ian Shaw**  
University of Canterbury

**Women of Aotearoa New Zealand**  
Talking about breast cancer



# Welcome to the Seminar

Welcome to the Breast Cancer Network expert panel and seminar on Breast Cancer and Environmental Risks

The journey to this day began when the Government's Health Select Committee recommended, in response to the 2006 Breast Cancer Network petition, that 'an

expert advisory panel of two or three scientists with expertise particularly in the area of endocrine disruption be established to initiate research into breast cancer prevention.'

Unfortunately, this advisory panel has not eventuated. However, a recommendation from the 2007 Breast Cancer Network national conference, that New Zealanders be educated about environmental factors and breast cancer, has been the impetus for this seminar.

With input from Professor Ian Shaw, the BCN Committee set about organising an expert panel and one day seminar to address the issue of environmental influences on the development of breast cancer, and in particular the influence of chemicals in our environment.

After many months of work, we were finally able to confirm expert speakers Professor Shaw, Professor Charlotte Paul and Dr Barbara Cohn. Two of our original speakers were ultimately unable to attend – Professor Sir Peter Gluckman and Professor Murray Mitchell – and we



decided to ask five New Zealand women who have had breast cancer to speak instead. These women will talk about the possible causes of their breast cancers and how exposures in their early lives may have influenced the subsequent development of this disease.

It is with great pleasure that we bring our expert speakers before you at this seminar - Professor Ian Shaw, Dr Barbara Cohn and Professor Charlotte Paul. Their support of this event has been invaluable. Each will approach the seminar question from a different perspective.

A most important finale to the seminar is the opportunity to question our panel of experts. This will be the time for you to ask your questions, and learn more about how to reduce the risk of breast cancer for yourself, your daughters and granddaughters.

We wish to sincerely thank Pio Jacobs for the Powhiri for our guests, John Gray and Carolyn Prebble, the Headmaster and King's School, for their help during the planning of this seminar and King's School for the complimentary use of this beautiful venue.

Kim Sipeli,  
Chairperson,  
Breast Cancer Network (NZ)

# Contents

General information about the seminar	1
Programme	2
<b>The Speakers:</b>	
Professor Ian Shaw	3
Professor Charlotte Paul	4
Dr Barbara Cohn	5
Gillian Woods	6
Kim Sipeli	6
Anna Mackey	7
Barbara Holt	7
Violet Lawrence	8

## *General Information about the Seminar*

### Catering

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Morning and afternoon tea, and lunch will be served in the dining room.

### Question and Answer Session

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Throughout the day BCN members will take your questions. Wearing pink shirts, the BCN Committee members and volunteers will move up and down the side aisles ready to collect written questions, take the microphone or pass the microphone along to you.

# Programme

- 8:30 Doors open, registration
- 9:30 Powhiri
- 9:45 Welcome and opening by Breast Cancer Network  
Chairperson, Kim Sipeli
- 10:00 Professor Ian Shaw  
Endocrine disrupting chemicals in food and the  
environment – what are the health implications
- 11:00 Morning Tea in the Dining Room
- 11:30 Professor Charlotte Paul  
Diethyl Stilboestrol (DES) prescribed for pregnant women  
in the 1940s to 1960s: Why does it matter now?
- 12:30 Lunch in the Dining Room
- 1:30 Women of Aotearoa New Zealand talk about breast  
cancer
- 2:30 Afternoon Tea in the Dining Room
- 3:00 Dr Barbara Cohn (via video conference)  
Hidden Science: The complexity of determining what  
causes breast cancer
- 4:00 Expert panel answers your questions
- 5:15 Closing by Breast Cancer Network Chairperson, Kim Sipeli

The Breast Cancer Network thank the following organisations for their continuing support: COGS, Lottery Grants Board, Neville Newcomb, Peter McInnes Pty Ltd (for Kitchen Aid Appliances), Lion Foundation, Marion Morris, Manning Funerals, Julie Lamb & Associates, Archetype Ltd, Campbell Accounting Services, Living Nature, Telephone Market Research Company Ltd, The New Zealand Chefs' Association, The Breast Centre.

*Ian Shaw is the Professor of Toxicology in the Department of Chemistry, at the University of Canterbury in Christchurch. He studied biochemistry at the universities of Bath and Birmingham, going on to lecture in toxicology and work on the toxicity of anti-cancer drugs, subsequently working in food analysis and doing research on toxic chemicals in food.*



*In 2000 Prof. Shaw moved to New Zealand to take up leadership of the Food Safety Group at the Institute of Environmental Science & Research (ESR). From there he went to the University of Canterbury as Pro Vice-Chancellor (Science) and in February 2009 returned to academic life at Canterbury University.*

### **Endocrine-disrupting chemicals in food and the environment – what are the health implications?**

Chemicals that mimic the hormone oestrogen belong to a broader group of molecules – the endocrine disrupting chemicals (EDCs), and they have wide-ranging effects on animals and humans. Oestrogen mimics (also known as xenoestrogens) closely resemble human oestrogen and therefore are able to fit into the oestrogen receptor unlocking the cell's femininity. There are many xenoestrogens; for example, genistein from soy and bisphenol-A that forms polycarbonate plastics. We are exposed to these chemicals continually in food and via the environment in which we live.

While the most striking effects of these chemicals are in men because they naturally have very low oestrogen levels, pre-pubertal girls and post-menopausal women have similar oestrogen profiles to men, so they too are affected. Exposure to xenoestrogens is thought to explain the declining age of puberty in girls and might be part of the mechanism of post-menopausal breast cancer.

At menopause, oestrogen production slows significantly. This means that ER positive breast cancer cells are less likely to divide because their division

*Continued on page 4*

is stimulated by oestrogens. But, if a woman with ER positive cancer cells is exposed to xenoestrogens, this might stimulate growth of the tumour. While this is rather controversial at the moment, there is a growing body of evidence of this in animals and cell studies.

***Ian's lecture is dedicated to the memory of his dear mum, Audrey Shaw who died of breast cancer in 2009.***

*Professor Charlotte Paul* MB ChB PhD DPH FAFPHM

*Charlotte Paul is Emeritus Professor in the Department of Preventive and Social Medicine at the University of Otago in Dunedin. Her background is in medicine, public health, and epidemiology. Her research areas include the epidemiology of breast and cervical cancer, contraceptive safety, and surveillance of HIV/AIDS and of other sexually-transmitted diseases.*



### **Diethyl Stilboestrol (DES) prescribed for pregnant women in the 1940s to 1960s: Why does it matter now?**

Stilboestrol (DES, a synthetic oestrogen) was prescribed to about 1000 pregnant women in New Zealand, mainly in the 1940s and 1950s, in the belief that it would reduce the risk of miscarriage. In 1971 it was shown that adolescent daughters born to mothers who took the drug in pregnancy were at risk of clear cell adenocarcinoma of the vagina and cervix.

This issue from the past still matters for several reasons: because of how the link was discovered, because of the need to keep medical records from the past, because adverse effects of DES are still being identified, and because the recent findings tell us something about the causes of breast cancer.

*Dr Cohn is the Director of Child Health and Development Studies (CHDS) in Berkeley, California. When she decided to study women's health in the 1970s it wasn't yet a specialist field and she was advised to study a disease instead. Undeterred, she approached women's health from another angle, studying women and heart disease, the leading cause of death in women.*



*Cohn went on to focus on identifying the factors during pregnancy that protect women from breast cancer and later the health effects of exposures to hormonally active environmental chemicals. She is currently investigating the effects of exposures to environmental chemicals before birth on the reproductive health of daughters and sons of CHDS study participants who are now having children of their own.*

## **Hidden Science: The Complexity of Determining what Causes Breast Cancer**

The mechanisms of certain diseases can be incredibly complicated to detect. Among other variables, genetics, exposures, and timelines complicate simple cause and effect explanations. Breast cancer remains one of the leading causes of cancer deaths among women in the Western world, and is a classic example of why exposures, risks, and outcomes can be so complicated to determine. After decades of study and millions of dollars, the mechanisms behind breast cancer remain unclear.

Human studies are consistent with the hypothesis that environmental risk factors for breast cancer interact with stages of mammary gland development early in life: in utero, during puberty and during pregnancy.

The paucity of human studies with long follow-up are a barrier to research on environmental causes of breast cancer. Very long-term (greater than fifty years) studies allow exposures during early development to be measured and potentially related to breast cancer development later in life. This will be demonstrated using DDT as a case study.

## *Gillian Woods*

Gillian was diagnosed with breast cancer in 1989 when she was 46 years old. It was initially devastating to feel that her life might be shortened and her barely-teenage sons left without a mother. But she was very lucky; her small ductal tumour was found early by mammography, and after a modified radical mastectomy (no adjuvant treatment needed) she has so far had no recurrence.



Before surgery Gillian consulted a doctor who offered dietary advice and nutritional therapy, which she followed for two to three years.

She began reading and learning about breast cancer. Gaining an understanding of what causes the disease has always deeply interested her and she has come to realise that many things may interact to increase risk. Gillian will talk about the years when she was having children and why this period of her life may have increased her risk. She will mention a number of physical and environmental factors that she believes played a role in causing her breast cancer.

## *Kim Sipeli*

Kim's breast cancer journey began when celebrating her husband's birthday with his sister at a whanau barbecue in Brisbane, in May 2009. She got the call on her husband's cellphone telling her to come back and see them at BreastScreen Aotearoa as quickly as she could on her return home. Her latest mammogram showed something wasn't right and she knew then and there it was cancer.



By early June she had had a partial mastectomy; her histology results indicated a one centimetre oestrogen-receptor positive cancer. The surgery was followed by five weeks of radiation therapy and she has been 'clear' ever since. It's been three years since her operation; sometimes it seems like only yesterday to Kim, and she always wonders about the HOW! Not 'why me', but how or what caused it.

*Continued on page 7*

Kim was fit, very healthy, with no family history and she doesn't drink alcohol or smoke. What caused the first cell to change? Kim is a librarian so reads a lot and sometimes surfs the net, Google Scholar, etc. In her first year of looking she attended a lecture at the Liggins Institute and listened to Professor Shaw talking about the Malaysia Veterans Dibutylphthalate Exposure Project. He spoke about an increase in breast cancer in families of DBP exposed veterans. Kim's father served in Malay Borneo in 1959, and she was born in 1960 – is there a connection?

## *Anna Mackey*

Anna was diagnosed with breast cancer in early 2009, at the age of 35 years. It was a 'triple negative' cancer and her treatment included surgery, chemotherapy and radiotherapy, finishing in December 2009.

Anna has a long standing pre-existing medical condition - Rheumatoid Arthritis, and has been on a range of medications to manage this for over 14 years, including anti inflammatory and pain relief medications and immunosuppressant drugs, predominantly Methotrexate. Although she doesn't know the causes of her breast



cancer, she will speak about any possible links between her Rheumatoid Arthritis and medication use, and cancer. In reviewing the scientific literature for this talk Anna found no direct evidence of increased risk of breast cancer with RA or methotrexate use, but there was evidence of increased risk of other cancer types, predominantly lymphomas, with long term immunosuppressant use.

## *Barbara Holt*

Barbara was born in 1936, the heaviest at birth of four children. She grew to 178 cm, and was menstruating by age 11, but has never been pregnant. She admits to having been slightly overweight since her mid-30s. Her mother probably has some Spanish-Jewish ancestry and quite a high proportion of her relations had cancers.

In 1987 (at age 50) Barbara found a large Grade 1 lump in her right

*Continued on page 8*

breast. She had a lumpectomy and under-arm nodes taken (all clear) plus radiotherapy. In 2002 ( at age 65) ultrasound revealed 2 large Grade II primary tumours + two more small ones, all in the right breast. She had a mastectomy and three years on Tamoxifen and has been free of breast cancer now for 10 years.



Barbara will talk about the possibility that her two episodes of breast cancer was partly caused by medical radiation received as tests for disease and as treatments: chest x-rays in her early 20s for detection of non-existent TB; and since 50, mammograms, x-rays and CT scans not showing any cancer; radiation treatment twice as a young person for an inherited skin condition; and radiotherapy after surgery for her first breast tumour. She will conclude with her recommendations on what we could do to safeguard other people against having too much medical radiation.

## *Violet Lawrence*



Growing up in Mohaka, Violet's family were self sufficient, growing their kai and living a lifestyle that most whanau envied. Then along came the pesticides to eradicate the blackberries along the roadside, which also killed their source of food; her whanau were not impressed.

Violet's father was a 28th Maori Battalion veteran, and alcohol and smoking were used to cope with battles fought against the Germans in the Middle East. She grew up in a dysfunctional whanau, and as a teenager she smoked and drank alcohol. Although she had her children young she bottle-fed them rather than breast feeding.

Violet is concerned about the lifestyles of many wahine – their choices to smoke and drink and eat unhealthy food. Today, Violet is a multiple stroke and breast cancer survivor, and wants to spread the message about what it takes to stay healthy.



Breast  
Cancer  
NETWORK NZ

Breast Cancer Network is an independent group of New Zealand women, most of whom have experienced breast cancer. We promote the issues and needs of those personally affected by breast cancer, advocate for improved treatment, and work towards preventing the disease for the benefit of the whole community.

## UPFRONT U KAIORA

The bi-monthly magazine of the Breast Cancer Network offers information, articles and a forum for New Zealanders with breast cancer to express their views. Contact us for a free copy.

## STOP CANCER WHERE IT STARTS

A project which works towards reducing breast cancer incidence in New Zealand through advocacy and the sharing of information. We have a leaflet and booklet about the influence of life-style and environment, and information for people wanting to take their concerns to local government. Enquiries and requests for leaflets are welcomed.

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## Hard to Say

Those chemical names on the back of skincare bottles might be hard to say. The fact that many are irritants, toxins, endocrine disruptors and even potential carcinogens is harder to swallow.

On average, a woman using synthetic skincare will apply 168 chemicals every day. The skin is the body's largest, smartest and most responsive organ, and what goes on our skin is absorbed into our bodies. We can no longer ignore the growing evidence of the harmful cumulative effect of these chemicals on our health.\*

For over 23 years Living Nature has led the world in natural, safe and effective skincare. We have a very simple mantra: if there's any question about an ingredient's safety, we simply will not use it. In Living Nature products you'll find no:

- Synthetic preservatives, like parabens or phenoxyethanol
- Harsh surfactants, like sodium, ammonium and lauryl/laureth sulphates
- Petrochemicals, including PEGs, paraffin and other glycols
- Silicones, mineral oils, genetically modified or irradiated ingredients
- Artificial fragrances
- Bisphenol-A
- Phthalates

In fact, our 100% natural products are so safe, you can eat them.

[livingnature.com](http://livingnature.com)



Environmental Working Group's  
**SKIN DEEP**  
cosmetic safety database



**LIVING NATURE**

100% Natural. Uniquely New Zealand.

*\*Reducing  
Environmental Cancer  
Risk: What We Can Do  
Nov. 2008-2009 Annual  
Report, President's  
Cancer Panel*

# Stop Cancer Where it Starts!

This Breast Cancer Network project works towards measures that will reduce breast cancer risk in New Zealand. Action includes sharing information about what women can do to make beneficial lifestyle changes for themselves and the next generations.

What we are learning about breast cancer is that a normal breast cell may be damaged several times over decades by a variety of environmental impacts before the natural defenses eventually break down and it mutates into a fully fledged cancer cell. Periods of rapid cell growth, such as *in utero* and during puberty, are times when the immature breast cells are

most vulnerable to environmental damage.

We are unashamedly promoting a "precautionary approach". This challenges the idea that there must be complete proof before taking action. "Act now - proof later", may be a maxim that will protect our daughters better than "wait for firm evidence."

However, individuals cannot easily change the wider environment. Carcinogenic and oestrogen-disrupting chemicals are widespread so that action is needed from governments to adequately assess their impact and reduce exposure.

If you would like to talk with us about this project, or obtain copies of *Stop Cancer Where It Starts* brochures, please contact us.

Breast  
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would like to thank their sponsors for their generous support.

