

# **CHEMICAL SENSITIVITY: Is there a problem? : A CONSUMER POINT OF VIEW**

By Mrs Dorothy Bowes (ASEHA President) *This lecture was presented by ASEHA President Mrs Dorothy Bowes, to the Health & Safety Assessment of Agrochemicals Conference organised by the National Research Centre for Environmental Toxicology in Brisbane, Queensland, February 1997.*

## **Introduction**

I would like to thank the organisers of this conference for the opportunity to address the meeting today. I am not very often invited to address the scientific community, so I am pleased to be here to talk to you about some issues that concern me. The aim of this conference is to provide a forum to interchange information on many aspects of health and safety relating to the use of pesticides. As a consumer, I would like to contribute to this by highlighting the public's perception of chemicals, their uses, and the regulations currently in place to govern them. As the focus of this conference is on the health and safety effects of agricultural chemicals on humans and the environment, it is also pertinent to highlight the problems of a group of individuals, who are sensitive to numerous chemicals, even at low doses. Current toxicology studies do not appear to take these individuals into account when assessing chemical risk.

Another aim of the conference is to seek to define the appropriate endpoints for risk assessment. For the chemically sensitive, this is a particularly relevant topic and we have outlined some of the issues that we, as a group, would like to see foremost on any agenda. Hopefully, we will be able to find some common ground, open some channels of communication, and work towards resolving these issues.

I was given assistance to produce this lecture by Dr Sharyn Martin, PhD who can no longer work in her chosen field due to chemical damage acquired in her workplace. I would like to acknowledge her professional assistance.

## **Chemical sensitivity**

Once sensitisation to a chemical is acquired, multiple symptoms can arise as more than one organ system is affected. These reactions can occur following exposure to minute amounts of a wide variety of chemicals that are common in the environment such as phenolic compounds,

furans, dioxins, terpenes...

Substances that cause these sensitivities are now prevalent in our society. These chemicals are found in:

- the air we breathe, e.g. sulphur dioxide, PAH's, TDI, dioxins, furans, heavy metals
- the food we eat, e.g. agrivet residues, fumigants, food additives e.g. SO<sub>2</sub>, heavy metals
- the water we drink, e.g. agricultural chemical residues, heavy metals, chlorine, APEs,

These are present in:

- our home environment, e.g. formaldehyde, plasticisers, pesticides
- our work environment, e.g. formaldehyde, industrial chemicals, pesticides
- the medications we take, e.g. active ingredients such as phenolic compounds, preservatives, fillers, colourings.

Some of the symptoms experienced are shown on the next overhead...

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OHP 1. Symptoms taken from ASEHA workshop respondents. June 1995

**Body system**

**Symptoms**

**CNS/Neurological** headache; mental confusion, memory

impairment, emotional liability; cannot stay awake; sudden acute fatigue; chronic fatigue; dizziness; loss of balance; poor coordination; poor concentration; speech impairment; depression; insomnia; hyperactivity; ADD; learning disabilities; neuralgia; lock jaw (TMJ)

**Neuromuscular**: tremors; muscle cramps; muscular spasms;

**Senses**:- Tinnitus; itchy ears; ear ache; blocked ears;

**Eyes**:- dry, itchy eyes; eye pain; weepy eyes; sore eyes; lumps in eyes;

**Vision**:- visual disturbances; blurred vision

**Integumentary**: skin irritation; dark circles under eyes; spontaneous bruising

**Inflammatory/allergic**: sinusitis; dry & sore throat; mouth ulceration; tongue swelling; bloodshot eyes; swollen gums

**Respiratory**: coughing; asthma; wheezing; shortness of breath; breathing difficulty; respiratory irritation; rhinitis; sinusitis

**Gastrointestinal**: cramps; constipation; diarrhoea; incontinence (anal leakage); vomiting; nausea; decreased liver function; jaundice; hepatomegaly; splenomegaly

**Skeletal/Articular**: reactive arthritis

**Metabolic disorders**: food intolerance; chronic food addiction; intolerance to medications; Inability to tolerate heat or cold; ?universal reactor;

**Genitourinary**: urgency; kidney pain; increased frequency of urination; urgency of urination; painful urination; nocturnal urination; bedwetting

**Cardiovascular/circulatory**: (coldness); mitral valve prolapse; palpitations; chest pain of no known origin; anaphylactic shock; localised swelling;

**Endocrine**: thyroid imbalance; PMT symptoms

The US National Academy of Sciences estimate that 15% of Americans suffer with chemical sensitivities.\* Figures for Australia are unknown.

\* National Research Council, Board of Environmental Studies and Toxicology. Workshop on Health Risks from Exposure to Common Indoor Household Products in Allergic or Chemically

Diseased Persons, July 1, 1987.

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Chemical sensitivity is acquired following exposure to a chemical or chemicals, that results in sensitisation. (Cullen, M 1987) While it is mostly considered that this generally occurs only in an occupational setting, following a single acute exposure, according to Casarett & Doull's Toxicology chronic exposure to chemicals can cause the same spectrum of effects as a single acute exposure. (Amdur, M O Doull, J and Klassen C D, 1991)

The Worksafe Exposure Standard for Atmospheric Contaminants states and I quote "Following the induction of a sensitised state, an individual may subsequently react to exposure to minute levels of that substance." Although low values have been assigned to strong sensitising agents, compliance with the recommended exposure standard may not provide adequate protection for a hypersensitive individual. Persons who are sensitised to a particular, substance should not be further exposed to that substance, unquote. (NOHSC, 1995)

Ideally, this should apply to any chemically sensitive person regardless of how they were exposed.

The US National Academy of Sciences estimate that 15% of Americans suffer with chemical sensitivities. (Ashford N and Miller C, 1991) Figures for Australia are currently unassessed.

## **THE PROBLEM WITH CHEMICALS**

We have not necessarily used chemicals wisely and do not have a good history of safe use.

In hindsight, some such as DDT and DES are downright dangerous and should not have ever been allowed on the market in the first place.

### **Chemicals have contributed to widespread environmental damage.**

- chemicals in the environment are destroying the ozone layer and causing a build-up of greenhouse gases. e.g. CFCs, methyl bromide; CO<sub>2</sub>

- Ozone loss and greenhouse gasses are contributing to climate change which has caused soil loss and turned fertile lands into deserts;
- water supplies are being contaminated by industrial pollution and heavy metals;

### **Intensive farming practices have caused :**

- salinity and lowering of water tables,
- algal bloom caused by run-off of nutrient rich agricultural chemicals is polluting our waterways and dams;
- degradation of farming land, including soil loss, nutrient deficiencies, agricultural chemical and heavy metal pollution;
- loss of biodiversity of flora and fauna, including fish kills, loss of beneficial species - pollinators such as bees, wasps, and bats - caused by agricultural chemicals;

### **Chemicals have caused human health problems**

- accidental releases of harmful industrial pollutants have caused large scale serious health problems e.g. Bhopal in India (Amdur M O, Doull J, Klassen, C D et al, 1991a), Chernobyl in the Ukraine;
- chemicals such as DDT, PCB, plasticisers are being implicated in intellectual impairment (Jacobson J L and Jacobson S W, 1996) and infertility (Sharpe R and Skakkebaek N, 1993);
- photochemical smog is known to trigger respiratory disease such as asthma and shows increased morbidity and mortality on days of high pollution. (Amdur M O, Doull J, Klassen C D, 1991b) Contamination of indoor air by VOCs also aggravates respiratory diseases. (US EPA, 1991);
- cancer rates have accelerated due to cigarette smoking, and melanoma as caused by ozone loss (Australian Institute of Health and Welfare, 1994);
- In hindsight medications such as DES, Thalidomide, NSAIDS have caused enormous suffering. It was reported to the Australian Health Ministers Advisory Council in 1988 that 40% of all drug related poisoning cases presenting at hospitals are caused by ingestion of pharmaceuticals. (Australia. Health Targets and Implementation Committee. 1988)

### **Chemical sensitivity is increasing in the population due to:**

- large numbers of chemicals and contaminants in our food;
- agricultural chemical spray drift in rural areas;
- high usage of pesticides and herbicides in the urban environment, especially where there is housing development near wetlands, golf courses, playing fields;

**There is constant exposure to levels of chemicals in the home, school and workplace.**

Evidence provided to the Senate Select Committee on Agricultural and Veterinary Chemicals in Australia in 1990 by the National Farmers Federation stated and I quote "It has been estimated that as much as thirty per cent of the value of agricultural chemical compounds sold could be for domestic or non-agricultural use" unquote. (Australia, Commonwealth of. Parliament. 1990) This represents a significant amount of poison that can find its way into the domestic environment.

The average domestic dwelling is a toxic chemical cocktail due to contamination by organochlorines, other pesticides, VOCs. (US EPA, 1994) This is especially true of new homes.

### **The domestic, school and workplace environment**

- Organochlorines

In the past these have been used as termiticides. They are now banned because they persist in the environment.

USEPA studies show that 12 months after application under a structure, indoor air contamination is higher than at the site of application. (US EPA, 1987)

Studies also show that indoor air levels of OCs contaminate breast milk which can be passed on to infants, who absorb them very efficiently and start their life with a toxic load. (Stacey C I and Tatum T, 1984)

- Other pesticides and VOCs

It is a requirement of outgoing tenants in rental premises, to have the carpets professionally cleaned and the premises treated for pest control. This can lead to excessive application of pesticides, as much as 2 -3 times per year. Pesticides used for pest and weed control in gardens can further add to domestic contamination.

Detergents used to clean carpets can contain formaldehyde , APEs and pesticide.

There is no regulation of levels of indoor air contaminants in the domestic environment. A study in WA showed that formaldehyde levels in domestic dwellings were higher than in the workplace. (Dingle P, Shuwee Hu and Murray F, 1993)

In the United States, the EPA moved into a new building and immediately many people fell ill. Air sampling indicated the new carpet was the problem. (Hirzy W and Morison R, 1989) Regulations in the US now control the use of chemicals in carpet.

VOCs outgas from building materials, furnishings, detergents, disinfectants, paper products, cosmetics and other personal products. (US EPA, 1991a)

While these are considered to be low level exposures, we are exposed to an ever increasing mixture of chemicals. Given the volume and numbers of chemicals involved it can no longer be said that we are only exposed to low levels. Combinations of chemicals could result in additive or even potentiated harmful effects that could equal or exceed a single acute exposure.

These only touch the surface of levels of chemicals present in the domestic environment which can, and are, causing health problems in the community. This also applies to schools where our most precious resource, our children, spend a lot of time. Children absorb contaminants much more efficiently than adults due to their higher metabolic rate. A chemical audit needs to be taken of domestic dwellings, public buildings and especially schools, which can be a major source of chemical exposure due to poor ventilation and VOCs.

Everybody who is exposed to chemicals will not react in the same way. The nature and intensity of injuries arising from chemical sensitisation varies depending on individual susceptibility to chemicals and predisposing factors such as:

- inherited genetic characteristics
- the capacity of detoxification pathways to break down and eliminate chemicals;
- ability of antioxidant systems to prevent damage;
- nutritional status;
- stress
- variations in absorption and distribution of chemicals due to differences in metabolic rates e.g. children, the elderly and chronically ill.

## **Major problems associated with chemical sensitivity.**

Chemical sensitivity is poorly researched and understood.

People with chemical sensitivities are very disadvantaged. Their health can be totally destroyed and their quality of life wretched.

Health and safety urgently needs to be addressed as it is clear that levels set for occupational exposures do not protect the population, as a whole, from exposures to chemicals or mixtures of chemicals. (Bukowski et al, 1996)

Once human health is damaged by chemical exposure, many problems and difficulties then arise;

- there is difficulty getting an accurate diagnosis and effective treatment;
- chemically sensitive people are badly treated when they are forced to complain about chemical usage in their environment that severely affects their health;
- complaints mechanisms for dealing with problems arising from chemical exposures are not well developed;
- places to make complaints are not clearly sign-posted;
- there is no cooperation from government or industry to resolve the resultant problems. The usual practice is for industry to discredit any complaints and/or threaten to sue. Is this why there are no visible complaints about chemicals in the community which allows industry make claims of years of safe use when this may not be true? ASEHA has direct experience of this type of treatment. It is for this reason that the adverse chemical reactions register is imperative and that complaints must be taken direct from the public.

### **Consumer rights**

Of the eight international consumer rights, two urgently need to be addressed. These are:

- the right to know, and
- the right to redress



## **Right to know**

Consumers currently have no right to know:

- what chemicals are being used in their environments;
- when they are being used;
- what is in the chemical formulations.

## **Right to redress**

The main difficulties in this area are that injuries caused by chemical exposures are difficult to prove and there are no universally recognised biological tests to diagnose or prove injury

Right to know and right to redress is essential from a consumer point of view, because, as an isolated group, we do not have a lot of influence to protect ourselves from chemical exposure and any resultant injury.

## **Difficulty litigating for compensation**

Workers damaged by chemicals cannot always lodge their compensation cases within the prescribed period due to:

- few precedents at law, possibly because many cases settle out of court;
- difficulty finding solicitors that are competent in this area;
- difficulty getting an acceptable diagnosis that will stand up in court;
- difficulty finding doctors who will support claims;
- not being well enough to cope with such a distressful situation;
- difficulty financing any court action.

## **Credibility of scientific studies and regulatory authorities** **Consumer concerns**

Many consumers, and particularly the chemically sensitive, are questioning the credibility of scientific studies and government regulations. (Australia, Commonwealth of. Parliament, 1990a) This is not good, as the community should have full confidence in decisions made by regulatory authorities to protect their health. Consumers are conscious that there is bias in all sources of information and the truth is not necessarily forthcoming. The BSE incident in England is a good

example of this.

Although Worksafe have acknowledged that adverse reactions are possible to extremely minute amounts of chemicals, (NOHSC, 1995) chemical sensitivity is not generally recognised as an organic illness, and has not been taken into account when toxicology studies are done and chemicals are registered.

The accuracy of measuring low levels of chemicals is questionable (Coghlan A, 1993) and it is not possible to screen for some impurities. CJD is a good example of this.

## **Consumer confidence is being eroded**

Consumer confidence is eroded because of:

- lack of access to information on formulations and toxicology data. When we are denied access to such information we can only assume industry is hiding something from us.
- requests for a written guarantee of safety for specific formulations from chemical companies have not (and cannot) be given.
- material safety data sheets do not always contain adequate information to determine potential hazards;
- regulations do not protect the community against chemical dangers, even in "best practice" situations;
- consumers should not be in the position of having to prove injury - the onus should be on industry to prove absolute safety;

Chemical registrations are increasing when we haven't sorted out the problems with what is already on the market. Many new chemicals look as though they may cause more of the same type of health problems. Why are chemicals registered when toxicology tests show bioaccumulation, liver damage, endocrine system effects, CNS effects. (NRA, 1996)

## **SOLUTIONS**

In many ways, it is essential for us to be part of our own solutions, but for this to happen we need:

### **Recognise chemical sensitivity**

- acknowledgment of the existence of chemical sensitivity in the population;
- research into the causes and effects of chemical sensitivity;
- better understanding of the needs of the chemically sensitive in the medical system . It is important to obtain a correct diagnosis to avoid inappropriate treatments that may further exacerbate the problem, especially unnecessary invasive treatments such as surgery;
- some costing needs to be undertaken to investigate the full burden carried by the community for the chemically sensitive;

### **Adverse Chemical Reactions Register**

- Expedite the adverse chemical reactions register, as a priority, to ascertain that chemicals are not causing ill health, and to fast-track problem chemicals out of the system;
- places to complain must be clearly signposted and well developed complaints mechanisms should be established;
- people wishing to complain about adverse reactions to chemicals should be given every encouragement and assistance to do so;
- Proper attention to consumer complaints is quality assurance and enhances best practice use of chemicals;

### **Reassess testing**

- biological tests should be developed as a requirement of registration of chemicals;
- those who complain about chemical usage should be given every assistance to work out which chemical or part of the formulation is causing the problem, e.g. sometimes the 'inerts' are more toxic than the active ingredients;

### **Consumer rights**

- community right to know should be enshrined in legislation;

### **Consumer consultation**

- meaningful consultations should be undertaken with the chemically sensitive in the community, to document the extent of their illness, audit their problems and ascertain their needs;
- when you consult with us, it is important to talk to us in language and terms we can understand, but above all - listen to us - don't lecture to us, because we have the practical experience that you don't.

### **In conclusion...**

It is time we seriously studied the full impact of chemical exposures on the population. Not just single chemicals in areas of expertise, but mixtures of chemicals common in our environments. When we look at the broader picture, it is changing from one of low level, chronic exposure, to acute exposures, with some very dangerous mixtures of chemicals. The low levels argument is getting very flimsy. It is unrealistic not to acknowledge background levels of chemicals in our lives and the likelihood of health problems as a result

There are already chemically sensitive people in the community, they are like the canaries miners used to take into the pits to test air safety. They are signalling to the world all is not well with the current levels of pollution and chemical use. It is time for the study to acknowledge this.

What study? - the one out there in the community.

.....We are the experiment -

.....It is a bad experiment.

.....There is no bioethics committee overseeing the experimentation;

.....No experimental design;

.....No controls;

.....No health monitoring;

.....There are no results, and

.....We didn't volunteer for the risks.

Like the English government who denied the BSE problem, we must come out of denial and work towards solutions. Not only are there costs in terms of loss of health, social life, income, and self esteem, but there are real costs to the community that must be met, such as welfare benefits and health care costs, resulting from the chronic ill health of the chemically sensitive.

We know something is wrong because there are too many of us experiencing the same type of problems - and the numbers are growing.

We would like to see some serious research into the issues we have raised and when you are doing the studies – don't forget us - we are here too - and would welcome the opportunity to become part of a successful outcome.

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