

Second Symposium on Ethics of Environmental Health (June 2014)

Need for consistency in dealing
with individual sensitivity to
workplace hazards

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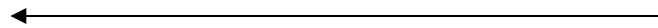
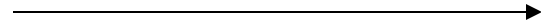
Scotland

- Aspiration rather than answers
- Conscious of expertise that is here

Growing interest in individual sensitivity to ionising radiations

- Clinical evidence – radiotherapy for breast cancer
- Growing radiobiological evidence

10s of Gy killing cells
in the clinic



few in mSv at work

2005 ICRP

Genetic susceptibility to radiation induced
cancer involving strongly expressed
cancer is rare

UK Expert View

1. Known genetic radiation sensitivity
 - Testing could be done – some well known genes
2. Risk of cancer from radiation ‘to some extent’ relates to factors that apply to cancer in general
 - Potential of lifestyle factors in occupational risk
3. Risk of specific cancers could be much higher in certain sub groups

(Human radiosensitivity – UKHPA March 2013)

Must not be seen as an ionising radiation
issue

But

An occupational or environmental health
issue

1. Genetic Sensitivity

- Multiple genetic links with sunlight and skin cancer
- Lots of others, eg:
 - Specific genotypes and lung function following exposure to vapours, dusts and fumes
(A J Mehta et al, OEM, Vol 71, issue 4, 234-240 April 2014)

Examples of Occupational Exposures Influenced by Genetic Factors

<u>Exposure</u>	<u>Genetic Factor</u>	<u>Disease</u>
Beryllium	HLA-DPBI	Chronic Beryllium Disease
Organophosphate Pesticides	PONI	Acute toxicity
Silica	TNF	Silicosis
Aromatic amines	NATZ, GSTM1	Bladder cancer

From Schulte P and Howard J. Genetic susceptibility and the setting of occupational health standards. Ann Rev Public Health 32:149-19, 2011

2. Lifestyle

- Link between radon and smoking in relation to lung cancer
- Mirrors established multiplicative risk between smoking and asbestos

3. Risks to sub groups

- Type 1 anaphylaxis to latex
 - Almost exclusively in the strongly atopic
- ?Ethics of elimination of latex

What do we do?

‘Traditionally – we strive to protect the most susceptible as a matter of principle – this should not be abandoned’

(Nelson and Kelsey OEM, Vol 71, issue 4, 229-230, April 2014)

Do we?

Should we?

UK Code of Practice on Noise 1984

In establishing a 90 dB(A) limit indicated
‘such a sound level ensures 80% of the
population would suffer a hearing loss of
no more than 20 dB after 50 years of
exposure’.

Experience to Date

ILO – genetic screening of workers should be prohibited, or at least limited to cases explicitly authorised by national legislation (ILO Code of Practice 1997)

Teratogens – conflict between sex discrimination and fetal protection

Individual Sensitivity

Is real

Not ionising radiation specific

Need a set of ethical standards for
occupational health as a whole and if
possible environmental health too