



11 February 2009

To whom it may concern

I have been asked to comment on the blood lead results recorded for the children living in camps for displaced people in Kosovo.

My qualifications

I am Professor of Environmental Toxicology at the University of Leeds and a member of the Unit of Molecular Epidemiology in the School of Medicine at the University. I have been at the University since 1977.

I hold a Bachelor of Science degree in Chemistry (1969) and a Doctor of Philosophy degree in Biochemistry (1973).

Most of my research is on the effects of chemicals on health and I have published many papers and articles in both the scientific and medical press over the years.

I am member of a number of UK Government committees which make recommendations on matters pertaining to the regulation of chemicals. In 1989 I became a member of the Working Group on the Assessment of Toxic Chemicals (WATCH) in the Health and Safety Executive. Since 1994 I have also been a member of the Advisory Committee on Toxic Substances in the Health and Safety Executive. The Committees in the Health and Safety Executive, of which I am a member, review evidence on the hazards of chemicals and the risk of exposure to these in the workplace, and recommend exposure limits for air concentrations of chemicals.

For the last 3 years I have been a member of a committee which sets occupational health exposure standards in the European Union; the committee is the Scientific Committee for Occupational Exposure Limits (SCOEL).

The lead results in the children

I have reviewed the blood test results for the children, results which were first available in 2004. The results indicated blood leads for most children at values greater than 65 micrograms per decilitre (65 ug/dl). The values were so high that the instrument could only provide a value at the upper limit for which it was programmed to give reliable results. So the actual blood lead results would have been higher than 65 ug/dl. We have no idea how high they might have been.

Results for successive years since then have indicated a range of values with many children as late as 2008 having blood leads greater than 65 ug/dl. For 2007 and 2008 most children had blood leads over 30 ug/dl with many having values over 40 ug/dl.

In many countries a blood lead result of 40 ug/dl in a person under 18 years of age would require an employer to investigate the reason for the employee having such a high value. Any values above 50 ug/dl would result in immediate suspension of that person from their job. In other words the person would be reassigned to other duties and removed from the source of the lead.

For male workers over 18 years of age it is currently a value of 50 ug/dl that would prompt an investigation in the UK, and a value of 60 ug/dl, or above, would result in immediate suspension.

Lower limits apply to women of reproductive age because of the risk to the developing foetus and for women in this category there would be immediate suspension if the blood lead was 30 ug/dl, or greater.

Why lead is a concern?

Lead affects the nervous system and the brain in particular. With blood leads in the region of 80 ug/dl there is a serious risk of lead encephalopathy, or brain damage. At values below this there are very well described effects on health including serious weight loss, effects on the gastrointestinal system, effects on the central nervous system which may manifest as irritability, being unco-operative, persistent headaches, loss of balance, tremors and even hallucinations. Effects on musculature include feelings of general weakness and being easily fatigued. There can also be effects on the organs in the bone marrow which produce blood cells and anaemia can be one outcome.

A major concern is the effect lead has on the developing brain and there have been many well conducted international studies which show that there is a clear relationship between lead and measures of intellectual attainment; the higher the blood lead the lower the intellectual attainment. This means that through no fault of its own a child may not achieve its true potential because its brain has been damaged by lead.

The United States Centre for Disease Control recommends that where a child has a blood lead greater than 45 ug/dl that chelation therapy ought to be undertaken. This therapy involves administration of an agent which complexes the lead in the blood, rendering it unavailable for uptake by tissues, and the chelated lead is subsequently excreted in the urine. This process of chelation may have to be extended to ensure that the blood lead eventually stays below 45 ug/dl.

Blood leads may rise after chelation even though an individual is no longer exposed to lead. This is because most lead in the body resides in bone. When lead is stripped out of the blood by chelation it will be replaced by bone lead and this process will continue as long as there is substantial lead in bone.

What should be done?

There is no doubt in my mind but that the children have to be removed from the source of their exposure to lead and that this should be with immediate effect.

Most lead in our bodies is through ingestion and this is particularly true for children. They will be exposed to lead in dust and paint and if this is on their hands, contact with the mouth will result in the lead being swallowed and absorbed from the gut.

So, if exposure cannot be prevented by alterations in the environment, the children have to be removed from that environment. If this does not happen their blood lead will remain high, and their health and development will be increasingly impaired.

It is unacceptable that children should have blood leads as high as these children have. Given that many children have values that would result in immediate suspension of an adult worker from his job, it is all the more worrying that children have to live in an environment which is so detrimental to their health.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Alastair Hay', with a stylized flourish at the end.

Alastair Hay, PhD, OBE
Professor of Environmental Toxicology.