

# Chemical toxicity: How to build a sound case

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Victims of chemical toxicity often become gradually aware of their illness over a period of years. It is frequently a difficult journey where they struggle to convince their employers and doctors that they are indeed ill. They usually start to do their own research until they find a support group of like-minded people who can empathise and share information. Unfortunately, by the time they reach a lawyer they will have amassed a huge amount of paperwork and gained an opinion of the cause of their illness that might be incorrect. It is also common that by this time they will be suffering some degree of mental illness or confusion.

In my experience, most toxicity cases have the following characteristics:

- Lack of evidence of the exposure and incomplete client histories.
- Lack of detail of the key chemicals in the exposure.
- Lack of objective evidence of the symptoms of the illness.
- Unfocussed medical reports that fail to address key points.
- Lack of documentation of relevant scientific/clinical publications.

Chemically induced illnesses may have predisposing factors, including increased genetic risk. All possible predisposing factors, such as unusual hobbies, previous illnesses, medications and social drug use must be considered.

This paper addresses the need to change the characteristics of a case so that it is clear-cut and well defined, rather than loose and ambiguous. Specific steps are recommended, the first of which is to involve a scientist or clinician to define the exposure and its likely outcomes. The results of specific tests and examinations can then lead to targeted clinical reports. Final collation of the evidence must be supported with robust scientific literature.

History shows that scientific knowledge about specific chemical toxicities has often preceded public health action by several decades. The delays have been strongly influenced by the major industry players and others with vested interests.<sup>1</sup> Nevertheless, even once public health reforms are taken, it is often difficult to argue the case for compensating a single exposed individual.

Tobacco smoking and asbestos are classic examples of toxins with delayed 'knowledge to public action'. The health risks of asbestos were known as early as the 1900s, and there were five to six hundred papers available in the medical literature up

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<sup>1</sup> RN Proctor, 'Tobacco in the Reich' (1996) 313 *British Medical Journal* 1450-54; J David (2003) *Mesothelioma Aid: Five Decades of Incriminating Company Documents* <<http://www.asbestos-attorney.com/histman.htm>>.

to 1938 demonstrating the lung and skin hazards of asbestos. However, it took many more decades to limit workers' and consumers' exposure.

Similarly, the risks of tobacco smoking were recognised in Germany in the 1930s and by 1939 Dr Leonardo Conti had established the Reich Bureau Against the Dangers of Alcohol and Tobacco. In 1943 and 1944, Schoniger and Schairer<sup>2</sup> published comprehensive epidemiological papers relating cigarette smoking to lung cancer. The findings indicated high risks similar in magnitude to those found in later studies. The next major national institution in the world to formally accept the evidence that tobacco is a major cause of death was the British Medical Research Council in 1957. Despite this, we are only now, more than four decades later, seeing major reforms to restrict public exposure to tobacco smoke.

History warns us that the path of litigation for chemical exposure is potentially treacherous. We must approach each case with as much rigour as can be mustered. The loose ambiguity that so often characterises such cases needs to be brought back to as clear-cut and succinct an argument as possible. The following steps are vital to achieving this aim:

- Define the exposure.
- Define the plaintiff's response to the exposure.
- Understand that the plaintiff might inadvertently divert or confuse the case.
- Recognise the limitations and problems of the health system.
- Achieve focus and detail.
- Pre-empt the other side's strategies.

## **DEFINE THE EXPOSURE**

It sounds obvious to say that the exposure must be defined, but I have been invited to write reports in many cases where this critical definition had not been made.

### **Avoid selective thinking**

Cases too often become focussed on one well-known component of the toxic mixture, while other components are ignored. In my experience, this tends to seriously limit the case. Frequently, it is one of the lesser-known components that caused the serious long-term consequences and there may be plenty of evidence in the scientific literature to support this. It is critical that all components of the exposing mixture be considered as suspect causative agents. Where possible, the effects of mixtures should also be considered. What might chemical A plus chemical B produce in combination?

### **Provide independent evidence of exposure**

It is important to document the evidence of exposure in as much detail as possible. Work clothes or other materials that may have been contaminated should be tested. I have been involved in cases where pesticide contamination was transferred to a third

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<sup>2</sup> E Schairer and E Schoniger, 'Lungenkrebs und Tabakverbrauch' (1943) 54 *Zeitschrift für Krebsforschung* 261-269; E Schoniger (1944) *Lungenkrebs und Tabakverbrauch* Inaugural-Dissertation zur Erlangung des Doktorgrades einer Hohen Medizinischen Fakultät der Friedrich-Schiller Universität zu Jena, Friedrich-Schiller-Universität, Jena.

person through a steering wheel cover and where contaminants from a foundry were evident in the mattress on which the plaintiff slept. These physical materials can easily be tested for the presence of toxicity. It is also prudent to look for effects of the chemicals on surrounding plant and animal life. The effects of toxicity on vegetation can be dramatic and often specific.

### **Define the duration and intensity of the exposure**

The duration and number of times of exposure should be defined as accurately as possible. It is usually difficult to estimate the intensity of the exposure as this will be influenced by many independent physical factors, such as airflow, geographical parameters, physical characteristics of buildings, and by variability within the source itself. Temperature and humidity often influence the state of chemicals and should be noted wherever possible. Factors relating to protective clothing might also be relevant. Protective clothing, including masks and overalls, might have been supplied, but were they of adequate design to exclude the exposing material for the period of use? This type of consideration is especially important in cases where people have been required to work in confined spaces for extensive periods.

### **Provide complete documentation of exposure**

It is exceptionally helpful if the plaintiff or a colleague has made official and documented complaints about the exposure. Even unofficial, diarised complaints are useful.

Once all this information is obtained, it is advisable to obtain Material Safety Data Sheets (MSDS) or other information, which defines both the exposing chemicals and their possible negative health consequences. In the case of a mixture, such as paint stripper, obtain separate MSDS sheets for all the component chemicals as well as for the mixture. In my experience, the individual MSDS sheets are often far more informative than that for the mixture. Most MSDS sheets also contain information about precautions that must be taken when handling the chemical.

### **DEFINE THE PLAINTIFF'S RESPONSE TO THE EXPOSURE**

There are three major types of response: acute; symptoms within 48 hours of exposure; and long-term and gradual sickness. Clearly, the first is the easiest to document and the last the most difficult, however even acute reactions are often poorly documented.

If the victim has been hospitalised, hospital records will usually provide test results and comments made by a number of different investigating practitioners. These records should be requested and examined in their entirety by a scientist or clinician. That person can summarise the findings and suggest what extra information is needed.

Many people visit their general practitioner in the first instance. Unfortunately, many doctors keep poor or inadequate records, however they do receive printed reports of all laboratory tests. It is always valuable to obtain records of all the tests that have been undertaken.

In cases where the development of the illness is slow and progressive, it is necessary to obtain a record of the history of the illness. This record should include all physical symptoms and illnesses, regardless of how relevant the plaintiff thinks they are. Early signs of exposure are not often recognised for what they are.

### **USING KNOWLEDGE ABOUT EXPOSURE AND RESPONSE TO EXPOSURE**

Once a dossier of information is compiled, it is relatively easy to construct a table, which shows the purported exposure on one side, and the symptoms experienced on the other. At this point it is likely to be appropriate to obtain specialist medical reports. Armed with precise information, it is possible to ask specific questions about the likelihood that one of the listed components caused the symptoms or condition.

### **UNDERSTAND THAT THE PLAINTIFF MIGHT INADVERTENTLY DIVERT OR CONFUSE THE CASE**

Problems are often caused by the general lack of recognition of chemically induced illness and the diverse ways in which such illnesses present. The plaintiff might have had a long struggle to find a doctor who believed they had a significant illness. The symptoms of chemical illness are often subtle and may not show abnormalities on conventional pathology tests.

Chronic fatigue and 'multiple chemical sensitivity' are frequent symptoms of chemical toxicity. Sensitivity to chemicals can often be so severe that the person is unable to live in a conventional environment. Brain confusion, including paranoia is common, however it is not known whether this is a true symptom of the toxicity or a result of fear and anxiety.

Plaintiffs usually develop a condition I describe as 'megalo-information syndrome'. Ask many ill people for a summary of events and often you will get huge volumes of material. One American woman sent me all her education reports from primary school onwards in response to my request for a brief medical history. However, despite the overload of less relevant information, they are likely to omit the important and relevant facts.

In the quest for understanding, the plaintiff will usually come into contact with other similarly affected people. This has many advantages as support groups usually offer helpful advice and much needed understanding. However, one negative may be that these groups cannot differentiate between sound and spurious advice. They frequently adopt a cult-like attitude to one chemical to which they incorrectly attribute all their symptoms. These possible negative effects can be avoided if the methods described above are rigorously adopted.

## **RECOGNISE THE LIMITATIONS AND PROBLEMS OF THE HEALTH SYSTEM**

Until recently, medicine was taught as a rote learning rather than thinking discipline. A recent study<sup>3</sup> used an educational workshop to show that training improved clinical question formulation, information-seeking skills, knowledge attitudes and search outcomes, but that these skills gradually eroded over time. Efforts are certainly being made to develop evidence-based medicine, but it is still not the way most practising clinicians were trained.

In my opinion, the following factors all contribute to the high incidence of poor diagnoses:

- General practitioners are poorly paid, have short appointment times and heavy workloads.
- Hospitals are under-funded at the coalface.
- Pharmaceutical companies write many of the protocols for managing health problems.
- Medical colleges and hospitals hold enormous power and drive conventional thinking; until recently teaching was hierarchical.
- Doctors suffer from information overload.
- Specialisation confuses management of multi-system diseases.
- Chemical illnesses have only recently been explained.
- The use of chemicals has increased exponentially.

Thus, while clinicians will make most of the final assessments and diagnoses, it is probably more efficient to use scientists and specialists, such as occupational hygienists, in the early stages of case investigation.

## **ACHIEVE FOCUS AND DETAIL**

Focus and detail is obtained by following a four-step process:

- Define exposure and likely health outcomes. Once defined, ensure that all the appropriate specific tests and examinations have been made.
- Assess the plaintiff's family health history and the plaintiff's personal illness and exposure history. Where possible obtain details of any medicinal drugs that have been prescribed or treatments that have been undertaken. Note any negative reactions to drugs or treatments. This allows definition of pre-existing risk factors.
- Obtain defined test results. Results without normal reference ranges and details of any unusual procedures are not useful.
- Collate physical, risk and clinical data. Support findings with references from scientific and medical literature.

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<sup>3</sup> GY Cheng, 'Educational Workshop Improved Information-Seeking Skills, Knowledge, Attitudes and the Search Outcome of Hospital Clinicians: A Randomised Controlled Trial' (2003) 20 *Health Info Libr Suppl* 1, 22-33.

## PRE-EMPT THE OTHER SIDE'S STRATEGIES

In my experience, tactics used against the plaintiff are fairly consistent. A common ploy is to attempt to discredit expert witnesses. This is easily contradicted if you know enough about your experts. Defence witnesses often use dismissive language to denigrate others' opinions. For example, some of my previous research was repeatedly described as 'flawed' by someone who had not ever seen the details of the research or its results. The negative comments can usually be readily addressed but should be accompanied with evidence if necessary.

A common defence strategy is to argue that epidemiological studies only apply to populations of people and not to individuals. While this is essentially true, the converse - a finding on a single person - is always referred to as anecdotal evidence. Ideally, between these extremes there will be one or more controlled studies where individuals with exposure will be compared to those without, all other factors being equal. However, in the case of chemical toxicity, controlled studies are rarely achievable or desirable. It is often necessary to argue a case on the most probable explanation, given the available information. I believe that epidemiological studies can be used to predict individual outcomes. Given this, the case then rests on having as much objective evidence as possible linking exposure to symptoms.

The fictional character Sherlock Holmes, amateur detective and chemist, used observation, deduction and evidence in all his work in the 1800s,<sup>4</sup> but his colleague, John H Watson MD, was always surprised by his deductive thinking. The difference between science and medicine still exists and should be considered when compiling toxicity cases.

The following quote from *A Study in Scarlet* by Sir Arthur Conan Doyle<sup>5</sup> can stand as a model for toxicity cases:

'By a man's finger nails, by his coat sleeve, by his boots, by his trouser-knees, by the callosities of his forefingers and thumb, by his expression, by his shirt-cuffs – by each of these things a man's calling is plainly revealed. That all united should fail to enlighten the competent inquirer in any case is almost inconceivable.'

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<sup>4</sup> J Osborn, 'Observation, Sherlock Holmes and Evidence Based Medicine' (2002) 14 *Med Secoli* 515-27.

<sup>5</sup> AC Doyle, (1887) *A Study in Scarlet* Beeton's Christmas Annual, Ward Lock & Co, London.