

## Epidemiological Evidence and Proof of Causation in Tort: Lessons from Australia

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### Possible roles for epidemiological evidence in proof of causation in tort

- (i) **Necessary condition**
  - a. General causation
    - i. X can cause Y
  - b. Specific causation
    - i. X was a cause of Y in this instance
- (ii) **Sufficient condition**
  - a. General causation
  - b. Specific causation
- (iii) **An evidential consideration**
- (iv) **No role**

### The Australian position

*Seltsam Pty Ltd v McGuinness* [2000] NSWCA 29, per Spigelman CJ:

89 In my opinion, evidence of possibility, including epidemiological studies, should be regarded as circumstantial evidence which may, **alone or in combination with other evidence, establish causation in a specific case.**

91 Causation, like any other fact can be established by a process of inference which combines primary facts like "strands in a cable" rather than "links in a chain", to use Wigmore's simile.

98 The Courts must determine the existence of a causal relationship on the balance of probabilities. However, as is the case with all circumstantial evidence, an inference as to the probabilities may be drawn from a number of pieces of particular evidence, **each piece of which does not itself rise above the level of possibility.** Epidemiological studies and expert opinions based on such studies are able to form "strands in a cable" of a circumstantial case.

137 In Australian law, **the test of actual persuasion does not require epidemiological studies to reach the level of a Relative Risk of 2.0**, even where that is the only evidence available to a court. Nevertheless, the closer the ratio approaches 2.0, the greater the significance that can be attached to the studies for the purposes of drawing an inference of causation in an individual case. The "strands in the cable" must be capable of bearing the weight of the ultimate inference.

## Analysis:

- (1) An evidential consideration that may support an inference of general or specific causation – a strand in the cable;
- (2) A relevant consideration even if  $RR < 2.0$ .
  - a. 'Even where that is the only evidence available to a court' [137]
- (3) Sufficiency for specific causation: "...**alone** or in combination with other evidence, establish causation in a specific case." [89]

## Application to the facts of *Seltsam*:

174 In my opinion, **the extent of increased risk indicated by all but one, or perhaps two, of the epidemiological studies is too small** to justify an inference of causation, either alone or in combination with other factors including biological plausibility, the laboratory experiments and the expressions of professional opinion which were, in large measure, based on the epidemiological evidence.

175 **The relative risk factors in the range of 1.32 to 1.58 for four of the six positive studies are well below the level of 2.0** which could satisfy a balance of probability test according to the U.S. case law. Whilst I do not hold that such a level is required, the fact that the increased risk of most positive studies is only of a low to moderate degree, **significantly undermines their importance** as a basis for inferring causation in an individual case.

176 One study shows a significant ratio of 1.7 and another a particular significant ratio of 2.758. These studies cannot, on their own sustain an inference of causation, **unless the other studies, both positive and negative, are given minimal weight. There is no basis in the evidence for doing so.**

182 When the negative results of the seven studies entitled to be given weight is combined with the small to moderate increased risk of all but two of the positive epidemiological studies, the effect of the evidence when combined as strands in a cable, does not, in my opinion, support an inference of causation in the specific case

## Thoughts

- (1) A strand in the cable
  - a. Accepted in English law, too (e.g. *Sienkiewicz v Greif UK Ltd* [2011] 2 AC 229, [172])
  - b. Desirable
- (2) Sufficiency for specific causation
  - a. Where (i) general causation is established; (ii) wrongful risk source doubles risk due to other possible cause (*XYZ v Schering Health Care* [2002] EWHC 1420, [21])
  - b. Where (i) general causation established and (ii)  $RR < 2.0$ ?