

Review by ESR on the report of John Leonard, Forensic Accountant , Gerry Rea Associates, Auckland, broadcast on TV3, Monday 23 October, 2006 as part of the documentary “Let us Spray”.

Preamble

The Institute of Environmental Science and Research Ltd. (ESR), is an independent Crown entity contracted to undertake scientific studies for a range of government clients, The Paritutu Study “Study of 2, 3, 7, 8 – Tetrachlorodibenzo-p-dioxin (TCDD) Exposures in Paritutu, New Zealand” was a full scientific study undertaken over three years.

All stages of the study, from design to final report, were peer reviewed to international scientific standards. (This means international experts in the field were consulted from the beginning to the end of the study - this included study design, modelling, results and review.)

Ethical considerations were given the highest priority. For a period exceeding 3 years before, during and after the ESR studies were completed there was in-depth, continuing engagement with the Paritutu community and particularly, with study participants. In addition research studies in New Zealand involving humans must meet and adhere to strict ethical guidelines established and agreed for each study, by a regional ethics committee operating under the NZ Health and Disability Ethics Committees.

ESR has now had the opportunity to review the comments made by Mr Leonard. It should be noted that neither ESR as an organisation, or the individual study authors were contacted by the accountant or TV3 while the accountant was either preparing the report or prior to the criticisms being broadcast.

Study Purpose

It is essential in assessing ESR’s report to understand that it had one single primary objective as laid out on page 4 of the report itself. The purpose of the study was to: “assess only the potential exposures to dioxins in the community through measuring blood levels of dioxin. The study and report did not include or attempt to include, an assessment of possible health effects related to measured dioxin.

Review of John Leonard, Accountant, report for TV3

The Executive Summary in the Accountant’s report for TV3 has been used as a framework for this review. We have examined the Accountant’s findings and have detailed below why we find them either incorrect or irrelevant. All illustrate the Mr Leonard’s lack of experience in this specialist field. It is clearly evident that he does not understand the fundamental purpose of the study, sampling methods, environmental exposure measurement, statistical design or the outcome being sought. Nor would we expect an accountant to have understanding or experience in not only scientific studies but also a particularly specialised scientific field.

It is manifestly clear that Mr Leonard has a fundamental misunderstanding of the primary objective or purpose of the study (Study of 2, 3, 7, 8 – Tetrachlorodibenzo-p-dioxin (TCDD) Exposures in Paritutu, New Zealand (2005)).

Only one outcome was sought in the study, to establish whether residents in Paritutu had been exposed to Dioxin or not. ESR's report clearly established that they had.

Review of points from the executive summary of Mr Leonard's report

- 2.1 This is a statement of opinion and not fact. Sample sizes were indeed small for a number of compelling reasons including the availability and suitability of participants. The study was specifically designed with an adequate number of participants so that a statistically significant conclusion might be drawn even within these constraints. So long as this basic statistical requirement is met the validity of the study is not affected. A larger sample size would not change the conclusion drawn as a result of the study.
- 2.2 This statement is incorrect. The mixing of data sets is not misleading and does not lead to incorrect conclusions. Merging of data sets is standard scientific practice in studies of this kind. .
Note: One specific purpose for data aggregation in this study was to ensure anonymity for participants as ESR was subject to very strict ethical guidelines, associated with the fact that the sample size was necessarily small. Because of the sample size it would have been possible to match samples with individual study participants, thus contravening all ethical, privacy and confidentiality requirements of the study.
- 2.3 This statement is incorrect. Tables 4, 5 and 6 in the ESR report contain aggregated data for each part of the study.
- 2.4 This statement is incorrect and illustrates a failure to understand the design and methodology of the ESR report. For reasons explained in 2.2 above, the data have been aggregated. Anonymised results for individuals may be contained in the text to illustrate a particular point. All other data presented are in aggregated form.
- 2.5 The objective of ESR's report was not to look at "degrees of effect". This was particularly excluded in the final report. Please see p. 4, 2005 report where differences in scientific comments are defined, these do not affect the report's conclusions.
- 2.6 The comment about the use of expressions refining factors is interesting but irrelevant to the report. The one essential objective of the ESR report as stated above, was to determine the serum levels of dioxin in Paritutu residents. Discussion about possible different factors that may have influenced this is not relevant to the validity of the conclusion of the report. This comment reinforces our conclusion that Mr Leonard has failed to grasp the essential objective of the report.
- 2.7 We do not understand what is being implied here? If Mr Leonard referred to Appendix E, NZ 2378-TCCD Toxicokinetic Model, (available alongside

Appendices A-P at <http://www.moh.govt.nz/dioxins>, since March 2005) then he would have understood the limitations of what is possible to infer on peak body burden of TCDD from serum sample values. Unfortunately he does not refer to Appendix E as one of the documents provided to him or referred to.

- 2.8 This comment is not relevant to the design, conduct and conclusions of ESR's study. It is a recommendation. As noted previously, increasing sample size would not change the study's conclusion that residents of the Paritutu community demonstrated elevated serum dioxin levels compared with the general NZ population.

Summary

Mr Leonard recommends future, wide-ranging research but this is not relevant to the criticism of ESR's report. It is not relevant that a call for more research be incorporated into a "scientific critique".

By international scientific convention it would be anticipated that: any person offering criticism of a study or report should have the professional scientific knowledge and experience necessary to make appropriate, relevant and accurate informed comment. In summary ESR does not consider that Mr Leonard's report for TV3 contains any substantive, scientifically rational criticism.

