

Preliminary Comments on the ISA from Dr. Roman Lanno

Comments on Chapter 7 – Ecological Effects of Lead

The 3rd draft of the Ecological Effects of Lead in the ISA is well written and an excellent improvement of the previous draft. In particular, the tables at the end of the chapter (Tables 7-3 to 7-6) organize a tremendous amount of data in a very accessible manner. This allows ready reference to the key data in each of the new manuscripts reviewed for this chapter. The standardization of units (e.g., mg/L, mg/kg) facilitates easier comparison of exposure doses in the studies. More importantly, it's easy to see where exposure dose is only nominal and when it is actually measured. This makes it fairly simple to see which studies are of sufficient quality to actually use as primary data for causal analysis.

The chapter is logically organized into terrestrial, freshwater, and saltwater sections, with consistent organization within sections. Although this leads to some repetition within sections, it is still easy to read and follow.

How should hydroponic data be handled? I suppose it can be used in causal analysis but not in extrapolation to soils.

Page 7-9, line 4 – What is meant by “Pb evaporation”? Do you mean Pb volatilization? To my mind this is not an important fate process for Pb.

Page 7-14, Table 7-2 – In the Pb concentration column, under vegetation, what is meant by “Grasses: 31% (percent of soil Pb in grass)”? Is this (Pb concentration in grass/Pb concentration in soil) x 100?

Page 7-18, line 15 – change “later” to “latter”

Line 31 – What is meant by “relative bioavailability”? Was bioavailability actually measured in this study or just sequential soil extracts? Relative bioavailability has a very specific meaning as defined in the bioavailability schematic, Fig 7-2. Please clarify.

Page 7-21, lines 7-8 – What are the simulated soils or soil components?

Page 7-22, line 19 – Change “. Modifying” to “) modifying”

Page 7-25, line 5 – What is meant by “organic content”? Is this organic matter content or organic carbon content? This needs to be specific since they are different measurements and needs to be addressed throughout the terrestrial section.

Line 29 – “near stationary sources” sounds like the sources are almost stationary. Perhaps “nearby stationary sources” would be better

Page 7-31, line 20 – Are these really metal-contaminated soils? These concentrations are around background levels for many soils.

Line 30 – Specific BCFs – Were these actually ratios of metal levels in plant tissues to soil pore water?

Page 7-33, line 12 – change “determined” to “observed”

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Page 7-36, line 8 – Anecic worms usually burrow up to 2 m not 6 inches. Use SI units.

Page 7-40, line 22 – Change “vegetative” to “vegetation”

Line 35 – If godwits are insectivorous, then why are they eating worms? Perhaps vermivorous is more appropriate.

Page 7-46, lines 31-32 – How is it possible to compare hydroponic Pb concentrations to Pb concentrations in soil?

Page 7-50, lines 28-29 – This seems somewhat odd – Pb doesn’t usually induce metallothionein production.

Page 7-52, line 37 – *Drosophila* should be italicized (*Drosophila*). Genus names are always italicized. This needs to be checked throughout the chapter as there are many other places where genus names are not italicized.

Page 7-56, line 3 – change “2,2” to “2.2”

Page 7-60, lines 11-12 – What is meant by this sentence – “Because toxicity is influenced by bioavailability of soil biogeological and chemical characteristics”?

Page 7-63, line 17 – Change “type” to “types”

Line 18 – This is not clear as to what this soil Pb concentration is

Line 26 – Should the units be mg Pb/kg?

Page 7-67, line – “physiochemical” means physiological/chemical – should be physicochemical

Page 7-74, line 6 – change “rather a larger” to “rather than a larger”; “whole” to “entire”

Lines 15-16 – What is meant by “the presence of effects at elevated exposures implies effects at lower exposures”?

Page 7-77, line 15 – change 2,08 to 2.08

Page 7-79, lines 25-26 – What is a “10 day nominal exposure”? Do you mean exposed to nominal Pb concentrations?

Page 7-83, line 19 – change “were” to “was”

Line 22 – again, the “nominal” issue

Page 7-88, line 3 – change “estimate” to “estimates”

Line 7 – add parentheses – (Pb 0.001 and 0.01 mg Pb/L)

Page 7-95, line 26 – change “Kessleri” to “kessleri”

Page 7-96, line 26 – change “with” to “to”

Lines 28-34 – this section should be in the terrestrial section

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Page 7-103, line 36 – delete “can”

Page 7-105, line 4 – What is meant by “saturation”?

Page 7-110, line 26 – change to “on the tissue distribution of Pb in freshwater organisms”

Page 7-114, line 18 – By “media” do you mean water?

Page 7-125, lines 18-19 – What is meant by “selective pressure on plants”? Is this in an evolutionary sense?

Page 7-151, line 18 – change “owing the” to “owing to the”

Page 7-153, line 1 – What are “high molecular weight cationic Pb species”? Is this Pb bound to proteins?

Page 7-219 – What medium were nematodes exposed in? Guo et al. 2009

Page 7-221 – change “quails” to “quail”