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Preliminary Risk Assessment for Pentachlorophenol (PCP)

Thank you for the opportunity to comment on EPA's preliminary risk assessment of pentachlorophenol (PCP). It should be noted for the record that it continues to trouble the commenters that the agency has taken five (5) years, since February 1, 1999, to "revise" the earlier draft risk assessment of PCP. The agency continues to delay its decision on this critical issue having told the U.S. District Court in *Beyond Pesticides/NCAMP v. EPA* (filed December 10, 2002) that the final reregistration eligibility document (RED) would be available in September 2005, which is now scheduled for the end of 2005 (Preliminary Risk Assessment Pentachlorophenol: Questions and Answers, December 3, 2004).

EPA has not, as it stated it would, incorporated into this assessment, which was originally expected in 2000, a review of PCP constituents of concern, including dioxin and hexachlorobenzene (HCB) -- both of which are classified as persistent organic pollutants (POPs) by the United Nations[1] and considered carcinogens by the National Institutes of Health.[2] This means that the assessment, as presented to the public, is seriously deficient in its analysis and wholly inadequate for the formulation of a PCP RED. Given that PCP is a combination of chemicals that includes HCB and dioxin, which are known to be hazardous materials, it is both misleading and improper to permit PCP use based on a seriously truncated review.

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[1] United Nations Environment Programe, 1999. Inventory of Information Sources on Chemicals: Persistent Organic Pollutants. Geneva, Switzerland.
http://www.chem.unep.ch/pops/pdf/invsrce/inventpopscomb.pdf

[2] National Toxicology Program, 2001. *9th Report on Carcinogens Revised January 2001*. Washington, DC. http://ehis.niehs.nih.gov/roc/toc9.html

The agency's revision of its assessment is based totally on data provided to it by the Pentachlorophenol Task Force, a chemical industry group that has a vested economic interest in the continuing registration of PCP. The agency states, "The revision is based on EPA's receipt of a PCP-specific exposure study from the Pentachlorophenol Task Force entitled 'Inhalation Dosimetry and Biomonitoring Assessment of Worker Exposure to Pentachlorophenol During Pressure Treatment of Lumber'."

Dramatic Reductions in Risks Unexplained

The preliminary risk assessment represents a dramatic reversal of the agency's assessment in 1999. Most striking are changes in exposure assessments that dismiss out of hand real world realities regarding common exposure to PCP-treated wood and its contamination. In 1999, EPA estimated that children's residential post-application exposure resulting from widespread use of PCP-treated utility poles poses an unacceptable cancer risk to children as high as $2.2x10^{-4}$ (2.2 cancer cases in 10,000).[3] However, this risk has miraculously disappeared with a simple unsubstantiated statement that this exposure does not occur. In fact, the Environmental Exposure/Modeling paper calculates a PCP concentration at the base of utility poles of 328 ppm, based on "average" rain intensity (Environmental Exposure/Modeling, p.15), again assuming that there is no risk of exposure to the public that has this contaminated ground in their yards. Real world samples have found concentrations at more than three times this level.[4]

In the revision, the agency states, "The opportunity for residential consumer contact is limited since PCP-treated wood is not sold to the general public. Rather it is predominantly marketed for commercial installations as utility poles. Where utility poles are installed on home/school or other residential sites, child contact via the dermal or oral routes is not anticipated since play activities with or around these pole structures would not normally occur." With all due respect, most people have observed children playing near utility poles. In neighborhood across the country, children can be seen with their faces against utility poles as they play hide and seek, using PCP-treated poles as "home base" playing tag,

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[3] U.S. Environmental Protection Agency, 1999b. Science Chapter for the Reregistration Eligibility Decision Document for Penta (PC Code: 063001, Reregistration Case Number 2505). Washington, DC.

[4] Wan, M. 1992. Utility and Railway Right-of-Way Contaminants in British Columbia: Chlorophenols. J. Environ. Qual. 21: 225-231.

and attempting to climb poles like trees as they try to inch their way up to the lowest foot post, among other things.

Utility poles line the streets and backyards of the United States. They are often next to bus stops where people wait each day. People lean against them, tack notices on them, and otherwise are exposed because of their close contact with them. In addition, more than three million utility poles are removed from service each year and may be sold or donated by utilities, ending up in people's gardens or other places around the home.[5] So, without explanation, EPA's revised position now is that "post-application residential exposure is expected to be negligible for utility poles," and therefore no further assessment is necessary.

The agency was in 1999 even given the example of recycled utility poles being milled into wood that was used for the construction of bird boxes and outdoor classrooms by a utility in Kansas, Western Resources, which was given an environmental award by the Kansas Department of Health and Environment for donating and converting discarded treated wood poles. When Beyond Pesticides wrote to 3,000 utilities asking that they disclose their policies and practices regarding the give-away or sale of treated utility poles taken out of service, the American Wood Preservers Institute told utilities, "Cooperating with this survey is not in the best interests of utilities. NCAMP is extremely biased against the use of preserved wood and will use the survey results to support their arguments against wood poles." Some of those that did respond indicated that poles were widely accessible to the general public. EPA has ignored this widely known practice and ignored the resulting exposure.

Wood preservatives have been shown to migrate out of poles, contaminating soil and water. According to the Agency for Toxic Substances and Disease Registry, 445 hazardous waste sites in the U.S. have been contaminated with PCP.[6] PCP is currently banned in 26 countries around the world.[7]

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[5] Adam G. Hedayat, 1994. Recycling of utility treated wood poles, in Morrell, editor, 1994.

[6] Agency for Toxic Substances and Disease Registry, Internet HazDat - Site Contaminant Query, http://atsdr1.atsdr.cdc.gov/gsql/sitecontam.script?in_cas=pentachlorophenol&in_cas2=&in_cas3=, January 28, 2005.

[7] Pesticide Action Network, "1995 Demise of the Dirty Dozen," and United Nations, Consolidated List of Products Whose Consumption and/or Sale Have Been Banned, Withdrawn, Severely Restricted or Not Approved By Governments," Fifth Issue, 1994.

The Industry Study and EPA's Risk Revisions Are Flawed

The Human Exposure risk assessment document is filled with questions that undermine any conclusion derived from the chemical industry study that continued use of PCP is acceptable, in light of the years of data that EPA has collected on PCP, going back to its Rebuttable Presumption Against Registration (RPAR), conducted from 1978 through 1986. What follows are highlights of the serious flaws in the report:

1. Underestimated exposure scenarios for residential exposure, as stated above, which ignores impacts to children and adults.

2. The use of an "average" dose for calculating long-term risks raises questions about the assessment, especially because of the small sample size and the uncertainty of the data. The range of practices cited indicates that averaging will not capture the full extent of the exposure.

3. The conclusion that all the inhalation exposure monitoring data were below the limit of detection (LOD) (Human Exposure, p. 9) suggests that the equipment may not have been adequately sensitive. In an staff memorandum from EPA scientist Siroos Mostaghimi, the following point is made: "It should also be pointed out that almost all (61/66) personal air sampling results returned values below the method LOD, and only one data-point exceeded the IOQ, possibly due to inadequate sensitivity of the method used. Without supporting inhalation and dermal exposure monitoring data (the latter was not collected at all), it is difficult to further assess the biological monitoring data."

4. "Exposure estimates based on an average 24 hour urine concentration might underestimate the total PCP exposure for these workers." (Human Exposure, p. 10) "It has been noted that the results of the urinary sampling have been corrected for field recovery, however, no raw data was available, nor were any descriptions of field recovery methods or results available for review." (Human Exposure, p. 19)

5. "It is not clear whether the air sampling methodology used was sensitive enough to successfully detect the very low levels expected in (largely) outdoor exposure situations." (Human Exposure, p. 10)

6. The new study does not explain a large difference between a 1984 EPA absorption study and the industry's new study. "According to a 1984 study conducted by U.S. EPA OPTS (cited in the study report), a typical 87 kg wood

treatment worker would be expected to absorb between 112 and 293 micrograms PCP/kg body weight/day by all routes. This range of PCP exposure was much higher than the highest total absorption of 15.3 micrograms PCP/kg body weight/day reported in this [industry] study. The discrepancy was not explained in the study report." (Human Exposure, p. 11)

7. The study underestimates the doses absorbed. The California Environmental Protection Agency reported this to EPA, citing "PCP cannot reach a steady-state in an acute toxicity study. Theoretically, a steady state level cannot be reached until the individual has been working in a treatment facility for 8 consecutive days (CDPR 1999)." (Human Exposure, p. 12) Because of this, the agency says that it will increase the short-term absorbed doses three-fold to account for acute exposure effects," but offers not explanation for why it is not applying a 100-fold increase. (Human Exposure, p. 21)

8. The full range of the exposed population at treatment sites was not considered, including those who transport treated wood and those working in offices on the premises.

9. At one point in the Human Exposure assessment, the agency acknowledges, "Since the pentachlorophenol is not rapidly degraded, and exhibits moderate toxicity, potential post-application scenarios may be of concern (ATSDR 1994)." (Human Exposure, p. 17) This is contradicted in the Environmental Exposure/Modeling paper, which says that, "Pentachlorophenol . . .has a low persistency in the environment." (Human Exposure, p. 18)

Ecological Effects and Environmental Risk Characterization Underestimates Exposure and Contains Data Gaps

The Ecological Effects and Environmental Risk Characterization demonstrates that PCP is moderately to very highly acutely toxic to many animals including birds, mammals, freshwater fish, freshwater invertebrates, estuarine and marine fish, estuarine and marine invertebrates. In addition, chronic exposure leads to endpoints such as increased mortality, decrease in size, and reduced survival of offspring in various species tested. Under the current risk quotient (RQ), the agency's low estimated environmental concentrations (EEC) result in risks that do not exceed the levels of concern. However, numerous studies show that PCP is ubiquitous in the environment and that it is leaching out of treated wood into soil and water. The Environmental Fate risk assessment document also reports PCP to be mobile in certain soils. (Environmental Fate, p. 1) We feel that the agency underestimates the amount and impact of PCP in the environment.

Two studies demonstrate the ubiquitous nature of PCP in the environment. In 1989, urine samples from 100 percent of 197 Arkansas children were shown to be contaminated with PCP.[8] Similarly, the National Center for Health Statistics with EPA conducted the Second Health and Nutrition Examination Survey (NHANES II) in the late 1980's and found PCP in the urine of 79 percent of its sample population of 28,000 people representing a cross-section of the nation.

Other studies show PCP leaching directly into the environment. In 1992, a study by Environment Canada found PCP at high levels in utility and railway ditches, including concentrations of PCP averaging 1060 mg/kg at the base of poles.[9] In a follow-up study, Environment Canada found that PCP's contaminants, which EPA has not fully examined in this risk assessment, were leaching out of PCP-treated utility poles and railroad ties. A third study conducted for Environment Canada found three poles treated with PCP that were adjacent to drinking water wells caused water contamination.[10]

In 1988, Bell Canada conducted a study to determine whether soil and groundwater in its storage yards were contaminated by PCP. In Quebec, where the company uses mostly PCP-treated utility poles, the clean-up criteria, or levels determined acceptable, were exceeded by factors as high as 100 at 10 out of 14 sites.[11] Another Canadian study measured the amount of PCP leaching out of a pile of 15 Douglas fir poles under natural rainfall conditions in British Columbia. The level of PCP released from these poles was relatively constant throughout the study period of four months, ranging from 1.57-2.85 mg/L rainfall.[12]

Dioxins also leach out of PCP-treated wood utility poles. Significant levels of dioxin were measured in soil samples taken from around PCP-treated poles,

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[8] Hill, R.H., et al. (1989). Residues of Chlorinated Phenols and Phenoxy Acid Herbicides in the Urine of Arkansas Children. Arch. Environ. Contam. Toxicol. 18: 469-474.

[9] Wan, M. 1992. Utility and Railway Right-of-Way Contaminants in British Columbia: Chlorophenols. J. Environ. Qual. 21: 225-231.

[10] RW Stephens et al., (1996). Draft Final Report, Wood Preservation SOP [Strategic Options Process] Socioeconomic Background Study. Carroll-Hatch (International) Ltd, North Vancouver, B.C. Prepared for Environment Canada Regulatory Economic Assessment Branch, Contract No. K2231-5-0054. March 31, 1996, p. 52.

[11] Marie-Helene Racicot, Bell Canada's Solutions to Pole Storage Yards Contamination (Abstract of presentation), Bell Canada, Environmental Services, 1993-94 data.

[12] U.S. Environmental Protection Agency, 1999. Science Chapter for the Reregistration Eligibility Decision Document (RED) for Penta (PC Code: 063001, Registration Case Number 2505), citing Whiticar, D.M. et al. 1994. Evaluation of leachate quality from penta, creosote and ACA wood products. Environment Canada DOE FRAP 1993-36.

with detectable levels of dioxin found 20 centimeters from the poles.[13] Many of these poles are in cities, parks, playgrounds and backyards. Again, contaminants such as dioxin have not been evaluated in this risk assessment.

Additionally, EPA admits to several data gaps that would only add to already high and unacceptable risk, including marine/estuarine invertebrate life cycle testing, marine/estuarine whole sediment invertebrate acute testing, freshwater whole sediment invertebrate acute testing, seedling emergence testing using rice, and vegetative vigor testing using rice. According to EPA, these tests are only required to support continued use in aquatic environments (guideline #1). However, considering PCP's ability to contaminate water, these tests could have been conducted under guideline #2, which states that these tests "may be required on a case-by-case basis depending on the results of lower tier ecological studies (e.g., active ingredient or end-use products are highly toxic to aquatic organisms)..." In addition, EPA states that it may require additional tests based upon results of the whole sediment acute tests, which were also not completed as part of the PRA. This situation adds to the accumulated body of evidence that EPA has not been moving forward to fully evaluate the impact of PCP despite existing scientific evidence that the risks of environmental contamination are unacceptably high and exceed tolerable standards.

Conclusion

Despite serious deficiencies in the industry study, many of which are identified by EPA, the agency proposes to use the data to support the RED. The agency writes, "Despite the key non-compliance and data gaps presented in this report, the decision of EPA is that the data are of sufficient scientific quality to be used in the RED document." (Human Exposure, p.12)

The identified hazards, unrealistic exposure assumptions, weaknesses in the industry study, and failure to consider HCB and dioxin in the context of safer available alternatives to PCP should give EPA pause. Tortured risk calculations coupled with study weaknesses identified by EPA should not be used to support a registration eligibility document.

Today, less toxic, economical and effective alternatives to PCP-treated wood products are readily available. Accordingly, the suspension and subsequent cancellation of PCP will not create serious economic or social hardships.

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[13] Gurprasad, N, et al., 1995. Polychlorinated Dibenzo-p-dioxins (PCDDs) Leaching from Penta-Treated Utility Poles. Organohalogen Compounds, 24: 501-503.

Ultimately, the risks presented by the continued use of PCP outweigh any potential benefits, both economic and social. EPA has sufficient data to support the cancellation of PCP and should move expeditiously to carry out its mandate to protect public health and the environment.

Sincerely,

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