

Environmental Health

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Acid Copper Chromate (ACC) Residential Uses Won't be Registered

Acid copper chromate (ACC) has been in use as a wood preservative in industrial/commercial settings in Europe and in the USA since 1920. USEPA has now taken steps to ensure it continues to be excluded from sale for domestic purposes. Their concern is that chromate (Hexavalent Chromium) is both carcinogenic, an irritant and an allergen and that there will be some uncontrolled exposure. Treated wood should be disposed of as if hazardous waste (not just burnt).

ACC comprises 32% copper oxide and 68% chromium trioxide. It is the copper that acts as the primary preservative. Chromate is included as a fixative, to slow the leaching of copper from the wood. This principle is the same for all the copper based preservatives: water soluble copper is fixed in the wood by a suitable fixative.

EPA argues that use of ACC could expose workers and residents to health risks. Those who apply the preservative can be protected, those who cut and fit treated wood could also be protected but it seems, to them, unlikely that protection would be universal and labeling of treated wood would be impermanent.

Hexavalent chromium is reduced to [the much less toxic] trivalent chromium once in contact with wood but the process is slow (over 1 month) and may be incomplete. Storage of wood for sufficient "curing" time would be expensive. Heating wood to increase "curing" rates would also be expensive. EPA believes that domestic users would be unlikely to guard treated wood for this length of time.

There are other chromate wood preservatives. The most popular preservative for domestic applications was chromate copper arsenate (CCA) a mixture of copper chromate and copper arsenate. Concerns about the release of arsenic mean that since 2004 no wood preserver or manufacturer in the US may treat wood with CCA for residential uses. A third CCA class action certification attempt failed in 2004 (Ardoin v Stine Lumber). This was, apparently, on the grounds that each case was sufficiently different (or likely to be so) that each should be assessed on its own merits and, that the lack of specific identifiable harms to health implied great uncertainty as to the likely success of the action.

Leaching of preservatives is to be expected and the chemicals will bind to soil. Chemicals are liberated from wood by burning and are concentrated in wood ash.

Leaching rates are probably highest a few months after environmental exposure begins. Copper is usually found to remain in the soil immediately around the wood and splash zone. However, soils move. The effect on bacteria, fungi and small insects will depend on concentration and accessibility.

Copper oxide has an occupational exposure standard of 0.1 mg/m³ TWA in the USA and copper fume has an exposure standard of 0.2 mg/m³ TWA in EH40 (UK). Hexavalent chromium has an occupational exposure standard of 0.05 mg/m³ TWA in EH40; and arsenic 0.1 mg/m³.

Soil Guideline Values (SGV) from the UK environment agency for copper have not yet been published (Feb 2007), chromium is usually in its trivalent form; hexavalent chromium is almost certainly of anthropogenic origin; for residential purposes the soil concentration should not exceed a reference value of 130 to 200 mg per kg dry weight. Arsenic should not exceed 20 mg per kg (20 ppm) dry weight.

Some studies find that within a few inches of buried treated wood levels of arsenic can be around 30 to 50 mg per kg, copper around 30 mg per kg and chromium VI not significantly raised above natural levels.

Comment

Metal based wood preservatives have been in use for decades and pressure treated woods contain several kg of metal per cubic metre.

Pressure treatment, and timber yard employees should be protected in line with EH40 standards and with skin protection. Sawing and sanding of treated wood should be avoided unless exposure to wood dust is controlled e.g. well ventilated. Wood treatments should be stored so as to prevent runoff in case of storage failure.

Regulation of wood preservatives is encompassed by the Control of Pesticides Regulations (1986) (as amended) and the Biocidal Products Regulations (2001). See also:

- *Code of Best Practice for the safe design and operation of timber treatment installations* C O P 2 B W P D A Second edition (2002)
- *2 A guide to the Biocidal Products Regulations for users of biocidal products* HSG215 HSE Books (2001) ISBN 0 7176 1821 8

Further treatment of wood to prevent or reduce leaching should be possible.

Treated woods leach toxins into the local environment when wet [e.g. rain or ground water] and produce hazardous ash if burnt. Incorporation of ash into soil can readily lead to exceeding permitted levels of contamination. Such ash should not be used to improve soils.

Treated woods should be disposed of as hazardous waste, groundwater and run-off should be controlled.

Run-off from treatment yards should be sampled and if necessary controlled and carefully disposed of.

Fire fighters would need to take precautions in timber yard fires and local residents may need to be evacuated. Fallout from a timber yard fire should be tested for degree of contamination. Timber yard management should anticipate the need to collect run-off water in case of fire.

Legal attorneys in the US are still advertising for wood treatment related business e.g. 'arsenic attorneys'. A great deal of analysis work is being done to validate claims against product manufacturers. Claims tend to cite non-specific health effects and are apparently motivated by the proposed need to fund wood replacement work.

In our view, domestic exposure via pressure treated wood is very unlikely to lead to identifiable harm to humans. There is probably no need to remove treated wood from domestic situations if it is well protected and dry.

