

INFORMATION ON ORGANOCHLORINE COMPOUNDS

Definitions

- PCP : **Pentachlorophenol** : Five chloro groups attached to a phenol
Boiling point 310°C. Solubility in water 8mg/100ml
- TeCP : **Tetrachlorophenol** : Four chloro groups attached to a phenol
- TCP : **Trichlorophenol** : Three chloro groups attached to a phenol
Boiling point 246°C. Solubility in water <100mg/100ml
- PCA : **Pentachloroanisole** : Five chloro groups attached to an anisole (methylphenol)
- TeCA : **Tetrachloroanisole** : Four chloro groups attached to an anisole (methylphenol).
Threshold : 100ng/l
- TCA : **Trichloroanisole** : Three chloro groups attached to an anisole (methylphenol).
Boiling point 240°C. Very volatile component with low odour threshold
(10ng/liter).

GENERAL

In South African wine cellars, as in many other cellars in the world, construction timber used since the mid-seventies were pre-treated with Pentachlorophenol to protect it from insects like woodborers. In the same way, wood used for the construction of pallets and other packaging materials were treated. **The presence of mainly this compound, but also other contaminating organochlorine compounds, can cause serious build-up of contaminant levels in cellars by absorbing barrels, insulation materials such as Styrofoam, silicon bungs and corks that act like sponges for these contaminants. All organochlorine compounds are volatile and are very easily transferred through air movements from one locality to another.**

In itself, these compounds do not hold a significant risk to the wine through contamination, because of the higher threshold value but it can be contributory to certain musty and damp smells detected in the cellar.

The danger of these compounds lies in the fact that certain moulds (*Penicillium*, *Fusarium*, *Geotrichum*, *Aspergillus* etc.) can enzymatically convert these chlorophenols to chloroanisoles, the threshold value of which is much lower than that for the chlorophenols. Trichloroanisole is known as the compound that causes “corkiness” in wines through introduction into the wine by contaminated corks. However, should this compound get into the wine tank through contact with contaminated air, the whole bottling and not just a random 2-3% of bottles will be “corky”. Experiences like this have prevented certain French Chateaux and Australian wineries from releasing an entire red wine crop with disastrous effects.

The process of contamination can occur through various ways but the most common is the **transfer of contaminants via air movement** in a concentration gradient process. This means that contamination will flow from the area with greatest concentration of the compound in question to the lower concentration.

Other ways of contamination can occur through the **washing of contaminated areas**. The water carries the contaminants to the floor and onto the walls where it is absorbed into the porous substrates (cement, concrete, bricks, paint). Through years of washing, these compounds build up on the surrounding building until the concentration gradient causes the building to start contaminating the surrounding area.

Agents of primary contamination

The primary contaminants in cellars are the following:

PCP treated construction wood like beams, doors, windows, floors, lofts, balustrades and walkways.

PCP treated storage materials like lug boxes, pallets, divider boards, and supporting beams for barrels.

Chlorine used in the washing of floors, tanks and surfaces.

Chlorine containing detergents.

Organochlorine containing paints and varnishes.

The dangers of organochlorine containing paints

As could be seen from the information given above, paints containing organochlorine compounds, as well as insecticides such as Pentachlorophenol and Lindane, can be a big source of contamination in a cellar. As soon as a cellar gets mouldy, and does not have an efficient aeration system in place (which is the case in most cellars), these chlorophenols are converted into chloroanisoles and seeing that paint covers such a huge part in every cellar (wood varnishes, epoxy flooring, painted walls etc.), a huge level of aerocontamination is the result. In many cases studied in France, as well as here in South Africa, it was found that varnishes and paints were the source of contamination.

ATTACHMENT B

SPECIFICATION FOR PAINTS/VARNISHES/WOOD TREATMENTS TO BE USED IN WINE AND BARREL AGEING CELLARS

The product should not contain any of the following organochloro insecticide compounds (synonyms of the compounds are indicated in blue):

1. Isomers of tetrachlorophenol
2. 2,3,6-Trichloroanisole
3. 2,4,6-Trichlorophenol
4. Acetate of pentachlorophenol
5. Aldrin

- Compound 118; HHDN; Octalene
6. Alpha or beta endosulfan
Malix; Thiodan; Thionex
 7. Alpha HCH
Alpha-Hexachlor
 8. Beta HCH
B-Hexachlor
 9. Chloranil
Spergon; Vulklor
 10. Chlordane
CD-68; Velsicol 1068; Toxichlor; Niran; Ochtachlor; Orthochlor; Synchlor; Corodane
 11. Dieldrin
 12. Endrin
Mendrin; Nendrin; Hexadrin; Compound 269
 13. Heptachlor
Velsicol 104; Drinox; Heptamul
 14. Hexachlorobenzene
 15. Isomers of DDD (dichlorodiphenyl-dichloroethane)
1,1-dichloro-2,2-bis(p-chlorophenyl)ethane
 16. Isomers of DDE (dichlorodiphenyl-dichloroethane)
 17. Isomers of DDT (dichlorodiphenyl-trichloroethane)
1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane
 18. Lindane
 γ -HCH; γ -hexachlor
 19. Methoxychlor
Methoxy-DDT; Marlate
 20. Mirex (hexachloropentadiene dimer)
ENT 25719; CG-1283; Dechlorane
 21. Pentachloroanisole
 22. Pentachlorobenzene
 23. Pentachlorophenol
 24. Pentachlorophenol oxide
 25. Quinozene
PCNB; Avicol; Botrilex; Brassicol; Folosan; Terrachlor; Ticarex; Tritisan
 26. Tetrachlorvinphos
Stirofos; ENT2584; SD 8447; Dietreen; Gardona; Rabon
 27. Trans-heptachloroepoxide
 28. 2,3,4,6-tetrachloroanisole
 29. 2,3,5,6-tetrachloroanisole
 30. Isomers of bromophenol
 31. Isomers of bromo-chloro-phenol

The **insecticides** that are recommended for use:

- Cypermethrine
- Deltamethrine
- Bifenthrine
- Alphamethrine

The recommended **fungicides**:

- Tebuconazol



South African Cork Quality Council Manual Of Procedures (MOP)

- Borax
- Boric acid

Attachment B

<p>Dekro paints (0836370144)</p>	<ul style="list-style-type: none"> - Steridex white (antifungal) - Sterisept white (antifungal) - Epicon clear Varnish - Hydromed Glass White - Hydromed Matt White - Epicon Marine Finish (clear base) - Epicon Marine Finish (hardener) - Fungal wash (chloride free) - Mediflex White
<p>Neutron (021-5512200)</p>	<ul style="list-style-type: none"> - Heavy duty acrylic white - Neuklad - Acrylic roof paint - Antifungal Wash ML 074 - Neutron AA (Rf EL06/08)
<p>Prominent Paints (Johan Batist; 0215773198) (Nicola Barnard; 0215512200)</p>	<ul style="list-style-type: none"> - Prominent 2 pack Floor epoxy - Prominent Ultrasheen - Prominent Fungal wash - Prominent Red oxide
<p>Weatherprufe Paints Joanne Bar (082 441 2551) Mark Giddey (082 655 6599)</p>	<ul style="list-style-type: none"> - Weathercrete part B - Masonry Primer - Cellarklad - TP Epoxy - TP Polyurethane - Chlorinated Rubber - Satin sheen acrylic white - Polar sheen white - Bonding Liquid (clear) - Tornado (cleaner/degreaser) - Elastocryl (Charcoal) - Druwebak Paint (white)
<p>BreatheCoat (Siegfried Domorose) (021-8528131)</p>	<ul style="list-style-type: none"> - BreatheCoat W-100 (antifungal)
<p>Duraline (021-8875640) (Dalene van Wyk; 0847354028) (Tiaan Smith; 082 843 1044)</p>	<ul style="list-style-type: none"> - Duraklad pure acrylic PVA exterior and interior washable waterproofing topcoat - Dura1 (paint sample) - Antifungal wash - Duraline Epoxy (Liquitile A&B)
<p>Woodoc (Johan van Deventer; 021-8534162)</p>	<ul style="list-style-type: none"> - Woodoc 10 - Woodoc 20 - Woodoc 25

<p>IFS (Rory Heath) (0824525940)</p>	<ul style="list-style-type: none"> - Pumadur TF Red - Pumadur RTC Red - Pumadur SL Red - Pumadur WB Red
<p>Lusikal (Wolfgang Luhn)</p>	<ul style="list-style-type: none"> - SILIKAL reactive resin flooring
<p>Plascon (Tony) (021-5346151/ 0836291819)</p>	<ul style="list-style-type: none"> - Geophon
<p>Allie Contractors (MK Allie) (021-6923609)</p>	<ul style="list-style-type: none"> - Epoxy Mortar - Self-levelling Epoxy
<p>StonCor Africa (George Tweedy)</p>	<ul style="list-style-type: none"> - ProStruct Wall Coating - ProStruct Flooring System - Stonclad UT Mortar PS 950 - Stonclad UT Sealer PS 951
<p>Dulux (Graham; 021-8516736)</p>	<ul style="list-style-type: none"> - Wash & Wear Silk - Acrylic PVA - Supergrip Primer - Tuffcote
<p>Steracon Antimicrobial Coatings (Deon v Rensburg; 0827897482)</p>	<ul style="list-style-type: none"> - Neusheen acrylic (antifungal) - HD pure acylic (antifungal) - 2 pack primer - PA2 1C1700-901B (antifungal) - PA1 C02000DCB (antifungal) - PA3 ECL32000B(antifungal)
<p>O'Grady's Paint (Lukas Prinsloo) (021-8535161/0823376650)</p>	<ul style="list-style-type: none"> - Wall Clad 2000 (antifungal) - Corpro 320 (Solvent-free epoxy; floor & steel coating)
<p>(Jacques de Jongh; 0834352125)</p>	<ul style="list-style-type: none"> - Corpro 200 - Bincoat
<p>Keim Coatings S.A. (Wolfgang Höger) (021-9305304/0827145491)</p>	<ul style="list-style-type: none"> - KEIM Biosil - KEIM Ecosil - KEIM Quarzil - Spezial-Fixativ
<p>Midas Steracon Antimicrobial Coatings</p>	<ul style="list-style-type: none"> - Steracon Low Sheen (antifungal) - Steracon Masonry Primer (antifungal) - Steracon Decontamination solution - Wall Coatings Masonry Primer - Midalux Earthcote

Self-Coat Paints (Cobus Crous) (0833102878)	- Self-Coat Paint - Self-Coat Thatchguard
Protech Industrial Epoxy Coatings (Deon v Niekerk; 0828475801)	- Protech Epoxy
Nocros Epoxy Coatings	- TAL Goldstar 6 rapid setting adhesive - TAL industrial epoxy grout
Weathermaster (Marc Giddy; 021 557 9147)	- Ecosheen Acrylic - Anti-fungal Wash
Classic Paints : (Quintin Jonck; 083 637 0144)	- Classic White sealer - Classic White - Aquacide White Abti-fungal - Satin Sheen Pastel Base Paint - Crete & Stone Sealer - Classic 154 - Water Disp Epoxy Enamel Active - Water Disp Epoxy Enamel Clear - Penguard Top Coat Comp A - Penguard T\C Clear
Pyro-Cote CC (Fire coating & specialized) (MJ de WET 082 471 7890)	- Tekrok S