

PERSONAL HEALTH PROTECTION **DURING** **APPLICATION OF ANTIFOULINGS**

Introduction

Many marine paint suppliers are introducing new products to replace tributyltin (TBT) self-polishing copolymer (SPC) antifoulings. These replacements are typically less harmful to the environment. In many cases this is because the active ingredients in the new generation of antifoulings change chemically to less hazardous substances once they are in seawater.

Although the new TBT Free antifoulings offer reduced environmental impact in comparison to the existing TBT SPC products, to ensure adequate human health protection these new coatings must still be handled, mixed and applied with at least the same degree of care as existing products, fully in line with safe working procedures and good painting practice.

This guidance has been written to describe what you should do, or what you should make sure that other people do, to protect the health of everyone who applies antifoulings or is near to the application of antifoulings, both TBT containing and TBT Free

Scope

This guidance covers health protection:

- It covers antifouling application, which will usually be outside, in the open air.
- It deals with application by airless spray.
- It does not deal with the fire and explosion dangers of paints.

It is general: For the specific hazards of each antifouling, reference should be made to the Health and Safety Data Sheet; (Material Safety Data Sheet (MSDS) in certain territories) for specific legal requirements checks should be made in the country where the antifouling is applied.

Hazards

The main hazard of antifouling paints, like all solvent-based paints, is damage to the skin. Antifouling paints contain solvents which wet and defat the skin. They also contain active ingredients, which may be skin irritants which can cause skin rashes. In some cases antifoulings contain skin sensitisers, which can cause a person who has been previously exposed to come out in a rash from the slightest contact with the same or similar paint.

The active ingredients are not only active when wet paint comes into contact with skin. Dry overspray dust or dry paint on overalls may also cause irritation. This is especially true if paint or overspray dust is in contact with wet or sweaty skin. The probability of irritation/sensitisation is made worse the longer paint or dryspray is in contact with wet skin and especially if it is trapped and pushed against the skin, for example, under the sweatband of a hard hat, or inside gloves.

The other significant hazard is damage to the lungs mainly from solvents but also from paint spray particles. Solvents will affect the central nervous systems and particulates can irritate inside the body as well as outside.

People at Risk

Obviously the nearer to antifouling spraying people are, the more they are exposed to paint or dryspray. However, everyone who is within reach of spray particles is at risk. This includes:

- Spray hand and cherry picker driver
- Potman
- Other trades working within reach of spraymist: fitters, people moving equipment in the dock bottom, supervising staff, including painting company technical service representatives
- People who come into contact with dryspray after painting has finished, eg. workers who remove propeller wrappings, staging, etc, and clean up the dock.

Protection; Good Ways of Working

The best way of protecting people is to have ways of working that keep most staff away from any contact at all with paint spray/dryspray. The next best way is to wear protective clothing.

During Spraying

When spraying is taking place, the only people in the area covered by spraymist/dryspray should be the sprayhand and his assistant or cherrypicker driver. Potmen and any supervisory staff should be upwind of the spraying. Everyone else should be kept out of the spray area. Best working practice is to:

- Mark out an exclusion zone with cones and tape
- Keep everyone out of the zone except the application team
- Keep everyone upwind of the sprayer

After Spraying

To reduce exposure to dryspray it should be removed and should not be allowed to blow around in the air. Between coats of antifouling, if dryspray has to be removed from painted areas, eg. blidge keels, this should be done by gentle brushing. It should not be blown off with air (or if this cannot be stopped, then only with very low pressure compressed air).

After all painting has finished, staging, propeller wrapping, etc, that is in any areas from which dryspray can fall onto or blow onto people, should be hosed down and damped with water before being removed. Dryspray should be swept up and removed from the dock bottom while still damp.

To summarise, best working practice is to:

- Wet dryspray with water and remove it
- Don't allow dryspray to fall or blow around onto people

Use of protective sheeting or screens in the drydock may constitute best working practice.

Protection: Clothing and Equipment

Clothing/Skin Protection:

All members of the application team (sprayhand, assistant, cherrypicker driver, potmen, technical service representative) should wear:

- A long sleeve, long leg cotton overall
- A second disposable overall with a hood worn **over the cotton overall**
- Long sleeve gloves, ie. gauntlets
- Rigboots – ie. boots which cover the ankles and lower legs.

Respiratory Protection:

The sprayhand and any assistant/driver with him, should wear respiratory protection against solvents which also protects all face skin.

Best practice is to wear a full face mask with tear off vision strips. This may be airfed or equipped with solvent and particulate filters.

Other people in the application team should wear half face respirators with solvent and particulate filters.

Eye Protection:

Everyone should wear eye protection, full face mask or at least safety goggles or glasses. This is also important for potmen mixing paint to protect against splashes.

Skin Protection:

Where skin is exposed, for example, the face skin of people wearing half masks, they should use a proprietary barrier cream (not petroleum jelly). It is always better to cover skin than to use barrier creams.

Heat Stress:

In hot climates, a single overall, worn next to the skin, can become completely wet with sweat. In this case, it is possible for active ingredients in paint on the outer surface of the overall to be drawn through it and irritate the skin. To prevent this and to prevent paint which soaks through the outer overall reaching the skin, two overalls are recommended.

However, wearing two overalls may subject people to undesirable heat stress especially if the inner overall is thick. It is possible that a single impervious overall which cannot be penetrated by paint or sweat may provide sufficient protection. Local protective clothing suppliers should be consulted for full details to facilitate correct selection.

Protection: Wearing and Changing Clothing

Wearing Practice

Overalls must be fully done up at all times to avoid skin contact with antifouling paints, and the hood must be worn over the head, and pulled tightly around the face.

Inner cotton overalls may be tucked inside boots and gloves. Disposable outer overalls should be worn over the top of boots and gloves. Overalls with poppers, velcro or elasticated cuffs should be used to make sure the overall sleeve stays in place at the wrist and that there is no gap and no exposed skin between overall and glove. Adhesive tape may also be used to secure sleeves/gloves. Gloves must have long sleeves.

Similar methods should be used to make sure there is no gap between trouser leg and boots. With calf length boots (rigboots) and one or both overalls outside the boots, taping may not be necessary.

Boots, with at least calf length tops, should be worn (rigboots). Shoes should not be worn.

Full face masks worn with hoods should cover all face skin. Half face masks, goggles and hood should cover as much skin as possible and any exposed skin should be protected with a proprietary barrier cream (not petroleum jelly). It is always better to cover the skin than to use a barrier cream.

Replacement and Cleaning Practice

Disposable overalls should be replaced every time they are taken off and at least daily.

Cotton overalls should be changed and washed every shift when applying antifouling.

If there is any paint breakthrough to the inside of cotton overalls, they should be replaced with a new pair.

Gloves should be replaced if there is any sign of solvent breakthrough or as soon as they become dirty inside. Wearing of light weight cotton inner gloves may be considered. Fabric sweat bands in hard hats should be washed daily, and the hats cleaned with detergent and water to remove any dirt and dryspray contamination.

Full face and half masks should be cleaned with detergent and water inside and out and stored in a dedicated container at the end of each shift.

Half mask filter cartridges should be changed daily or more frequently if breakthrough occurs. They should be thrown away at the end of each shift and new ones fitted at the beginning of the next shift. Ensure the appropriate (correct) cartridges are being used suitable for Marine antifouling application.

Protection; Personal Hygiene

The spray application team should remove outer overalls, at least, and wash their hands thoroughly before going to the toilet and wash their faces before smoking, drinking or eating.

Transfer of irritant materials to areas of skin which are more delicate than the hands can be very unpleasant and is to be avoided.

After working or as soon as possible after coming in contact with wet paint or dryspray, the application team should take a shower. These staff should not change into other clothes without having a shower, or go home in working clothes.

First Aid

Skin:

There are no specific antidotes for skin irritation. Any rashes should be gently but thoroughly cleaned and a soothing anti-inflammatory type cream should be applied. Affected areas should recover in a few days.

Eyes:

If paint or dryspray gets in eyes, they should be washed with water or saline for at least ten minutes. If discomfort continues, the sufferer should see a doctor or specialist eye hospital as soon as possible.

Lungs:

Any respiratory symptoms should be referred immediately to a doctor or hospital.

Training

Ways of Working

People do not change behaviour and ways of working as the result of a single instruction. The best practice described above needs to be introduced with full training for all personnel and will need clear procedures plus constant reinforcement from management and supervision.

Clothing and Equipment

People need to be trained in the detail of wearing protective clothing. The overlap of sleeves/gloves and trousers/boots, the wearing of hoods and the use of barrier cream - all need repeated instruction and supervision.

Specific Respiratory Protective Equipment (RPE) training should be given. In particular, RPE should be tested for fit and people taught how to test for leaks.

Personal Hygiene

The disciplines of proper working are a very personal area. None the less they need to be enforced and supervised if people are to be protected from skin problems.

Disclaimer: This guidance is based on knowledge and information available on 01/01/2002. Whilst provided in good faith, neither CEPE nor any member associations or companies can be held responsible for errors or omissions therein. Users of antifoulings should check compliance with local Health, Safety and Environmental law and obtain a copy of the current Health and Safety Data Sheet from their paint supplier.

Membership of the CEPE Product-oriented Group “Marine Coatings” includes the following companies: Akzo Nobel International Coatings (UK), Hempel Marine Paints (DK), Jotun Paints (N), SigmaKalon (NL), Ameron (NL) and Chugoku Marine Paints (NL)

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DO's AND DON'Ts

DO

- **Wear an overall with full length sleeves and legs**
- **Wear a second disposable overall with a hood**
- **Keep the buttons and zips done up and the hood over your head**
- **Wear long sleeve gloves and boots**
- **Make sure there are no gaps or exposed skin at wrist and ankle**
- **Wear a full face mask or a half mask, goggles and barrier cream**

DO

- **Keep everyone out of the area except the application team**
- **After application is finished hose down overspray on staging, propeller wrapping, etc, with water and remove it**

DO

- **Wash before eating, drinking or smoking**
- **Shower before going home or as soon as possible if in contact with paint or dryspray**

DO

- **Throw away your disposable overall every day**
- **Wash your face mask and inside your helmet every day**
- **Wear a clean overall and helmet sweatband every day**
- **Replace your gloves as soon as the inside looks dirty**

DON'T

- **Allow paint or dryspray to come into contact with your skin**
- **Allow paint or dryspray to remain in contact with your skin for more than half an hour, especially if your skin is wet or sweaty**