1st in India Bio-based HVAC Chemicals

Environmental + **Regulatory** + ***Performance*** + **Economy:** Issues Addressed

Biobased Products:
Industry + Environmental Driven Solutions

Special Features

Non-Hazardous
Meets In-House Air Quality Test
No Harsh Odour
Environmentally Friendly
Non-Acidic
Non-Caustic
Neutral pH

Water Based
Non-Flammable
Non-Combustible
Solvent-Free
VOC-Free
Ozone Friendly
RoHS Compliant

Products from: Magna International, Singapore. **USA Mil Grade / NATO MCRL listed etc.**

Sr	Item	Features	Unbeatable Features + Economy
1	**Cleaning & Maintenance Chemical**	**Nonyl Phenol Free Cleaning Agent,** Liquid / Powder, Degreasers queries solved	Powder/Liquid Works in Hard water up to 500 PPM, Dilution: **Alkali:1:100/ Acid:1:50-60** Acts only on Rust-Scales-Oxides
2	**De-scaling Chemicals** Reuse bath multiple time. End use as coil cleaner	**Reusable**, maintain pH by Top-up, **M-Red** NEW pH **Indicator type chemical**	Reusing Bio-based products, help reduce Environment pollution, in plant **Fire safe**, Heating chemical bath hastens descaling
3	**Anti-Corrosive Coatings:** Flexible, **1-time coating,** High pH fumes resist **Features: Not available Pan India with any other coaters**	**100% success rate in India since 2004**, 60 months coating has worked for 12+ years, @ Malad Mindspace 100% success Pan India, with various OEMs.	**Premature leak arrested**, leaks below straight tubes. Such leaks occur within warranty period, can be arrested, Conforms to **USA FDA***. Transparent coating with VBCI vapors, protects surrounding and inaccessible parts. Brand New units protected from Day-1, **For Older working units and Fins coating T&C apply**. Toughest sites are welcome,
3	**Anti-Corrosive Coating**: Thixotropic Liquid, VOC FREE, Biobased	Useful for Old exposed units. No need to clean the oxides, coating penetrates through the oxides, and protect the base metal	**For Older working units T&C apply.** **Will not wash-away in monsoon,** **Not suitable for Fins coating.** Toughest sites are welcome,
4	**Control Panels, PCBs, VFDs etc. corrosion protection**	**VBCI Vapor based** protection, covers un-reachable areas	Brand new units protected from Day-1, for old working units T&C apply. **VBCI PACKING Range also available**
5	**Hygiene 99.9999 + %**	1 time fogging = 180 days	Protection for **major unanimated surfaces**
NOTE: Details given here in brief, more details in Data Sheet, **Our assurance is only for product**, Application and regular maintenance process need to be followed, or else warranty is void			

Your Toughest queries are welcome. **Import Directly**. *Protection, + Future Ready*

Pan India coating and DEEP Coil Cleaning services I imported chemicals + unique equipment

Mahesh R Mehta/ Business Plus, Mumbai

cell: +91-8879010700, ecochemplus@hotmail.com

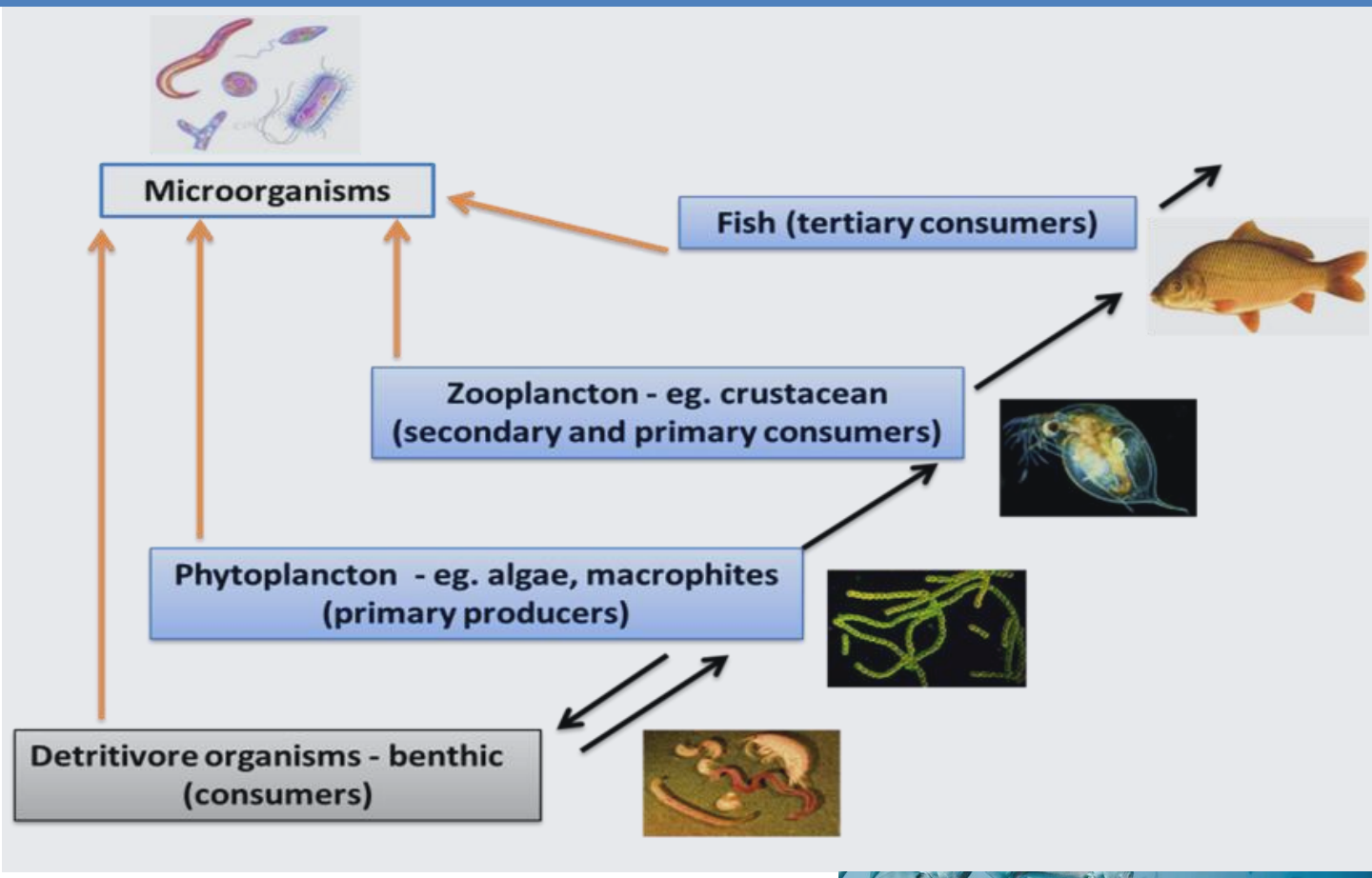
Magna

Your Partner in Chemical Innovation

NEWS ALERT

February 2023

Cleaners free of Nonyl Phenol Surfactants from Magna, address environmental, regulatory, and performance concerns.



Introduction

Nonyl phenol surfactants have been linked to negative environmental impacts, such as disrupting the endocrine systems of aquatic organisms.

In contrast, alcohol ethoxylates are generally considered to be less harmful to the environment.

Magna

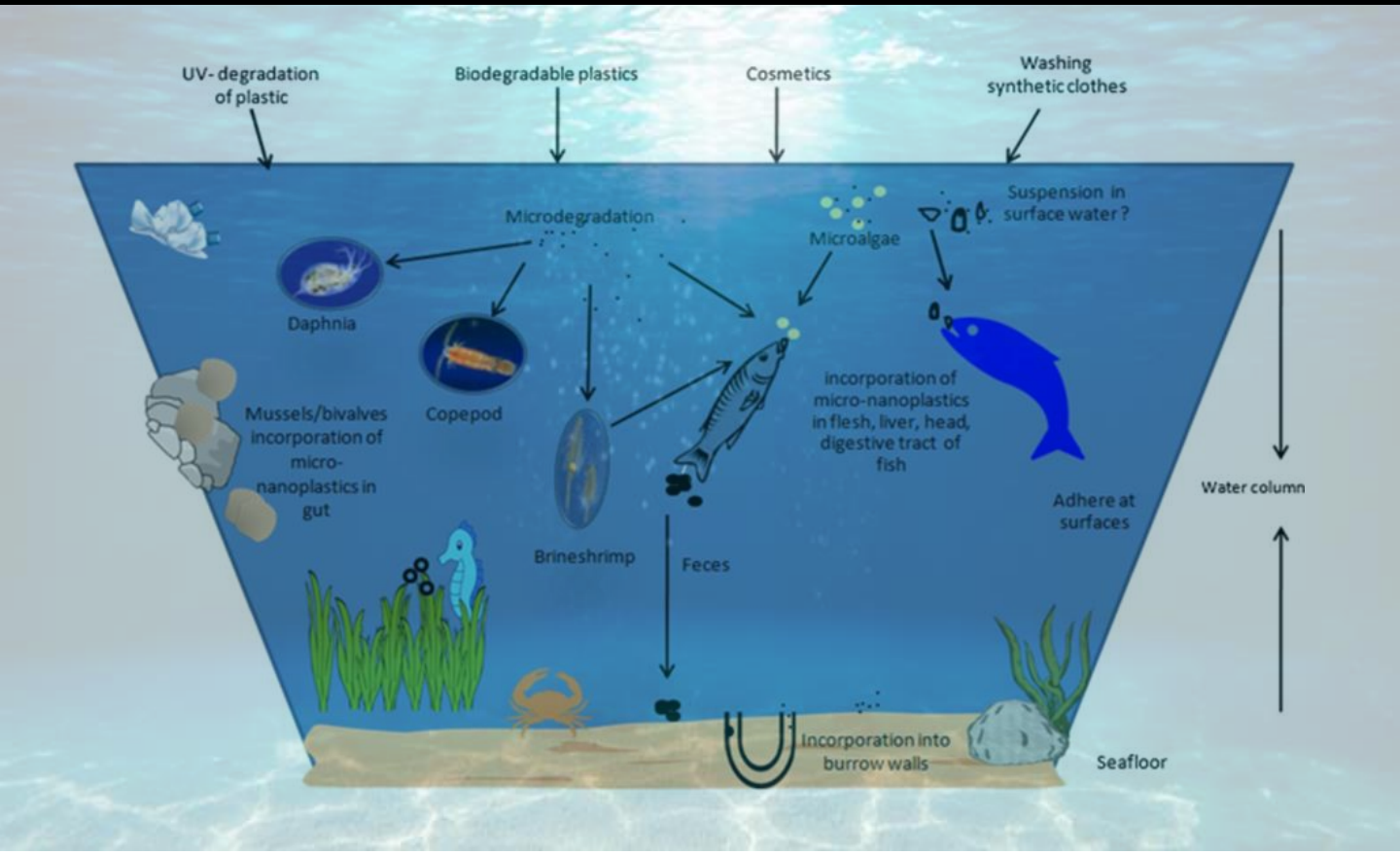
Your Partner in Chemical Innovation

NEWS ALERT

February 2023

Nonylphenol is known to have ecotoxicological effects on a variety of organisms, including aquatic invertebrates, fish, and mammals. It has been shown to have estrogenic effects, which can disrupt the endocrine systems of organisms and cause reproductive abnormalities. Nonylphenol can also bioaccumulate in organisms, which can lead to biomagnification in food chains.

The endocrine system of aquatic organisms, also known as the hormonal system, is a complex network of glands, hormones, and receptors that regulate many physiological processes, such as growth, reproduction, and behaviour. The endocrine system of aquatic organisms can be affected by exposure to certain chemicals, including nonyl phenol surfactants.



Nonylphenol has been found to act as an endocrine disruptor in fish, molluscs, and other aquatic organisms, interfering with the normal functioning of hormones such as estrogen and androgen.

Magna
Your Partner in Chemical Innovation

NEWS ALERT

February 2023

The effects of endocrine disruption can vary depending on the species, age, and sex of the organism, as well as the concentration and duration of exposure. Some of the potential effects of endocrine disruption in aquatic organisms can include reproductive abnormalities, altered growth and development, changes in behaviour, and increased susceptibility to disease.

Overall, the potential impacts of nonyl phenol surfactants on the endocrine systems of aquatic organisms highlight the importance of using environmentally friendly surfactants that are less likely to have negative impacts on the environment and its inhabitants.

Regulatory pressure: In many countries, including the Canada, European Union Singapore and the United States, the use of nonyl phenol surfactants is heavily regulated due to their potential environmental impacts. This has led many companies to seek out alternatives such as alcohol ethoxylates, which may be more acceptable from a regulatory perspective.

Magna
Your Partner in Chemical Innovation

NEWS ALERT

February 2023

Magna entire range of cleaning products are free from Nonyl Phenol

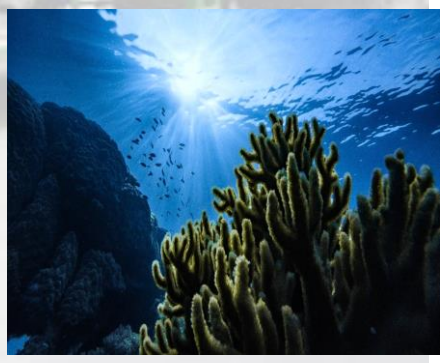
Magna range of products are designed to clean effectively while minimizing harm to the environments. Alcohol ethoxylates are used in all our cleaning products.

Alcohol ethoxylates can offer comparable or even superior performance to nonyl phenol surfactants, depending on the specific application.

Overall, the preference for alcohol ethoxylate over nonyl phenol surfactant is **driven by a combination of environmental concerns, regulatory pressures, and performance considerations.**

As more companies and consumers prioritize sustainability and environmental responsibility, it is likely that we will continue to see a shift towards the use of more environmentally friendly surfactant options like alcohol ethoxylates.

Alcohol ethoxylate is generally considered to be highly biodegradable. Biodegradation is the process by which microorganisms, such as bacteria or fungi, break down organic compounds into simpler compounds. In the case of alcohol ethoxylate, the hydrophobic (water-repelling) and hydrophilic (water-attracting) properties of the molecule make it readily biodegradable in aerobic (oxygen-rich) environments.



Magna

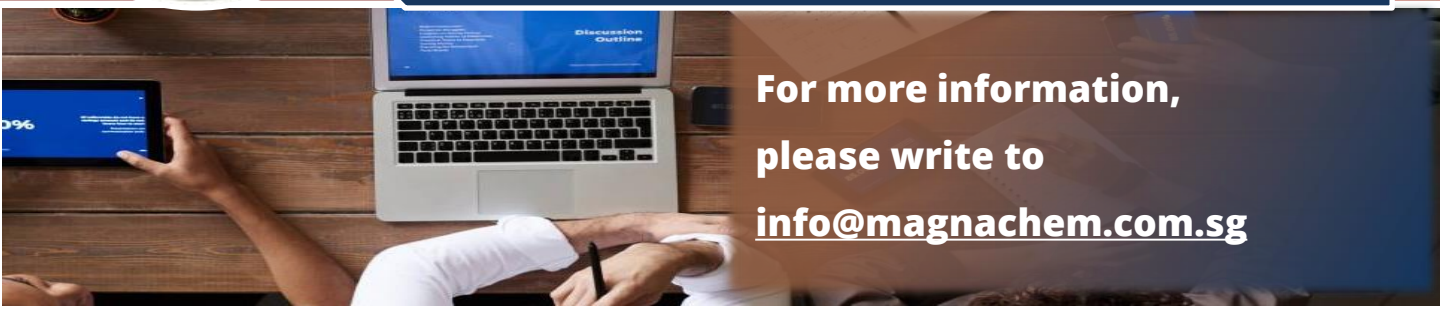
Your Partner in Chemical Innovation

NEWS ALERT

February 2023

Studies have shown that alcohol ethoxylates can biodegrade rapidly in the environment, with some forms of the compound having half-lives (the time it takes for half of the compound to degrade) of as little as a few hours to a few days. Additionally, alcohol ethoxylates have been found to biodegrade into non-toxic compounds that are unlikely to have a negative impact on the environment.

Although alcohol ethoxylate is generally considered to be highly biodegradable, it is imperative that Magna cleaning products are used and disposed of according to local regulations.



For more information, please write to info@magnachem.com.sg

ASIA EXCELLENCE AWARD 2017 | TOP 20 | PROMISING SME 500 2016 | TOP 100 SINGAPORE EXCELLENCE AWARD 2012 / 2013 | WPO WORLDSTAR WINNER 2017 | AsiaStar 2016 APF | Singapore Packaging STAR AWARD 2016 | A member of | A member of EFC EUROPEAN FEDERATION OF CORROSION | A member of NACE INTERNATIONAL | A member of THE WORLD CORROSION ORGANIZATION | A member of STLE Society of Tribologists and Lubrication Engineers

V.C.I. CORROSION INHIBITOR

Magna International Pte Ltd
Blk 9005 Tampines Street 93 #02-242
Tampines Industrial Park A
Singapore 528839

PRODUCT INFORMATION

VAPPRO 886

V.C.I. Water Based Corrosion Inhibitor

Non-Toxic V.C.I. Water Based Corrosion Inhibitor In Compositional Compliance With FDA* CFR-21 Parts: 175, 105, 175.300, 176.170, 176.180

INTRODUCTION

Over the last few years, Magna has elevated the concept of environmental awareness to the level of a corporate mission. That is why we took the initiative in researching ways to manufacture water based V.C.I. inhibitors and coatings.

This gave us a head start in time and knowledge that has enabled us to help reduce / replace the current number of solvent based products in our product range.

Choosing a water based corrosion inhibitor need no longer be a trade-off between performance and environmental issues.

In fact, a key priority now is ensuring safety, health and environmental concern while meeting desired performance.

Magna Chemicals, a market leader in Vapour Corrosion Inhibitors is now offering a range of V.C.I. water borne systems with similar performance to that which you have come to expect from conventional solvent borne systems.

DESCRIPTION

Vappro 886 is a water based corrosion inhibitor developed as a complete replacement for oil based rust preventives. **Vappro 886** aqueous solutions are heat stable. **Vappro 886** is designed to be removed with conventional alkaline cleaners but, in many instances, it can be coated over with paints and primers without removal.

Vappro 886 is a non-toxic V.C.I. water based corrosion inhibitor. Specially developed to replace conventional, toxic and health hazard oil based rust preventive.

Vappro 886 is made from Acrylic Copolymer emulsion with a mixture of non-toxic organic inhibitors. **Vappro 886** formulation offers unprecedented advancement in outdoor corrosion protection. It successfully provides up to 30 months of protection in harsh, outdoor unsheltered protection.

Vappro 886 is non-flammable, weldable, biodegradable and has excellent salt spray resistance. It provides a fast drying, clear coating and a non-flammable protective barrier that allows visual inspection of the metal surface after application.

FEATURES

Water based, safe, non-toxic and biodegradable

Non-flammable and weldable

Forms a fast drying, glossy coating

Forms a clear and dry film which renders attractive appearance to protected parts

Heat stable

Needs minimal surface preparation, can be applied on damp surfaces

Excellent salt spray resistance

Can be over-coated with most generic topcoats, epoxies, polyurethane and alkyds

Excellent inter-film adhesion

For use on ferrous and non-ferrous metals

Conforms to FDA * *: i.e. USA FDA

Eliminates cleaning and housekeeping problems associated with oils

Important**: Unique vapor phase action also protects uncoated and difficult-to-reach areas

Helps delay HVAC premature GAS leaks. **: T&C apply.

SPECIAL APPLICATIONS

*Castings, forgings, tubular parts, machined and honed metal components.
*Use as a quenching fluid or in dipping applications operating at elevated temperatures.
*Precision machined parts, structural steel, sintered metals, bars and roll stock.

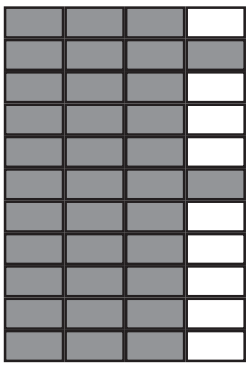
Smaller applications such as water pumps, electric motor housings, exposed shafting, pipe, tubing, engines, castings, forgings, metal enclosures, conduit and housings and many other uses.

PHYSICAL AND CHEMICAL PROPERTIES

Appearance	White, transparent colourless, liquid
Odour	Almost odourless
pH @25oC	8.1
Boiling Point	ca.100 oC as water
Melting Point -	oC
Softening Point	Not applicable oC seta flash cc
Flash Point	N.A.
Flammability	N.A.
Explosive limit	N.A.
Oxidizing properties	N.A.
Vapour Pressure at 20oC	23 mbar as water
Relative density at 20oC	1.04 g/cm3
Solubility	Miscible in water
Viscosity at 25oC	75 mPa.s Brookfield

METALS

Mild Steel	
Copper	
Cast Iron, Flake or Ductile	
Aluminum Alloys	
Zinc	
Brass (30% Zn)	
Silver	
Copper-Nickel Alloys	
Stainless Steel	
Black and Tin Plate	
Aluminized Steel	



KEY :-

EXCELLENT

GOOD

ACCEPTABLE

POOR

Business Plus, Post Box No.1501, Girgaon P.O., Mumbai 400004 INDIA. ecochemplus@hotmail.com // cell: 8879010700
MAHESH R MEHTA

VAPPRO
VAPOUR CORROSION INHIBITOR
VBCI BIODEGRADABLE VCI

NEWS ALERT !

VBCI Series - A class of environmentally friendly corrosion inhibitors for a cleaner, greener, better tomorrow.

8 Oct 2019

Vappro VBCI 867

VOC-Free Biobased Coating

Biodegradable Vegetable Based Oil Anti-Corrosion Coating

Passed German VIA Test Method 81305-002 and ASTM B117 1000 Hours Salt-Spray Test

Environmentally Friendly Coating that Protects and Lubricates Equipment Against Corrosion During Operationally Use or Mothballing

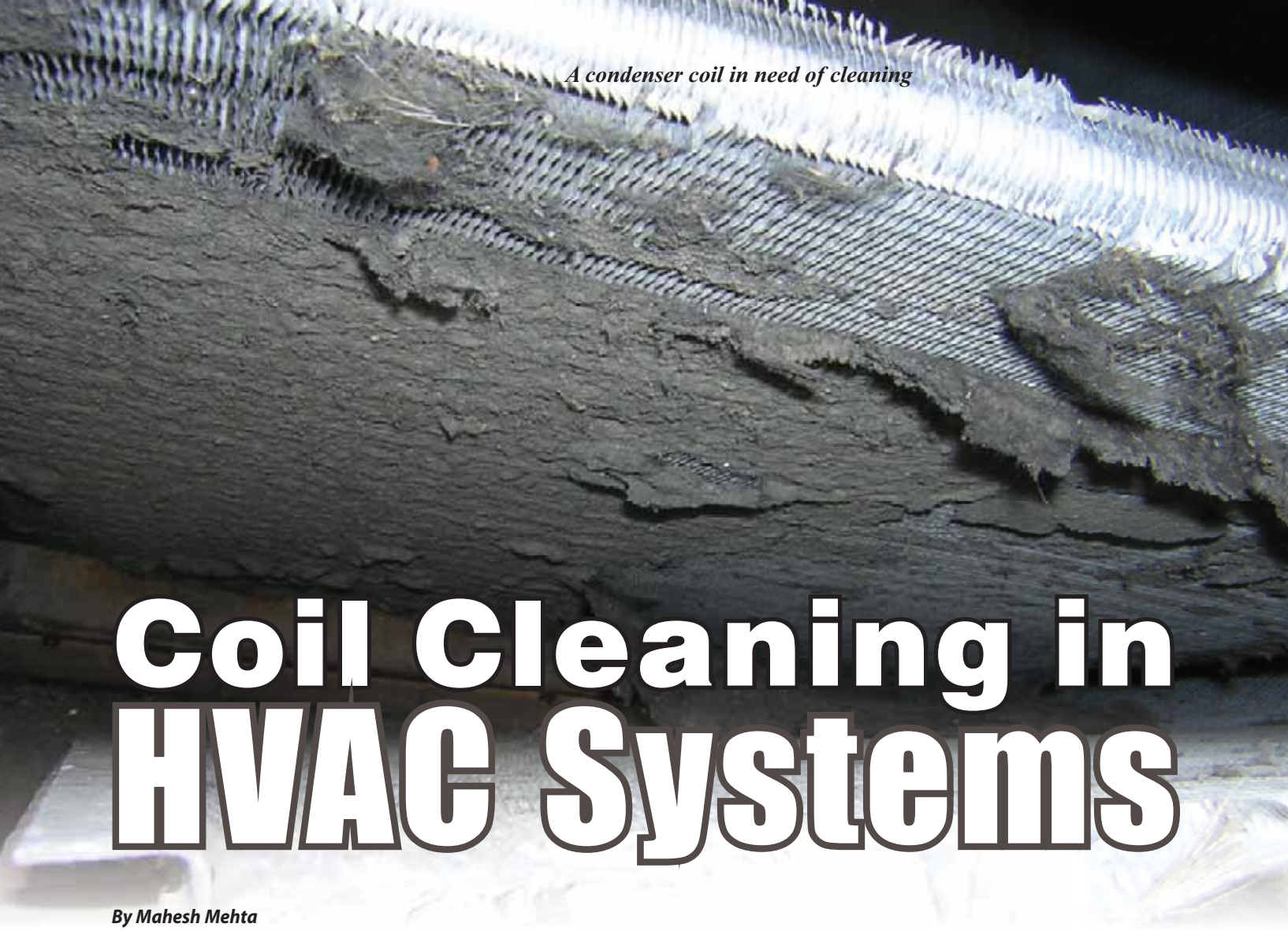
Introduction

Global warming due to climate change has compelled many to look into more environmentally friendly solutions while solving corrosion problems.

Over the last few years environmental regulations and an increased desire by consumers for greener products have created a greater demand for hydrocarbon-solvent-free coatings.

As a manufacturer, we stay ahead of the curve by having fully tested and excellent products ready for market before they are needed, one such product is Vappro VBCI 867 Vegetable Based Oil Coating.

At Magna International, we position ourselves on the forefront of green issues by examining the overall environmental impacts of coating – from raw materials, through formulation and production, to end use and end-of-life management



A condenser coil in need of cleaning

Coil Cleaning in HVAC Systems

By Mahesh Mehta
Proprietor
Ecochem, Mumbai

Introduction

We know that HVAC spreads air, but many of us are not fully aware of the various air-borne contaminants, virus, bacteria, etc. that this air spreads. These organisms get trapped in condensers and cooling coils, creating air blockage that results in reduced air flow. This in turn affects heat transfer, thereby increasing power consumption. Viruses such as measles, influenza, tuberculosis and legionella, transmitted via air, can flow through the HVAC system and create serious health issues.

Coils are three dimensional structures and hence are not as easy to clean as a tabletop or a floor. Once air contamination deposits start building up on the fins, the task becomes more strenuous. Common sources of contamination are oil, grease, hair, powder, fibers, chemical fume deposits, etc. There are three issues that arise from this situation:

1. By insulating heat transfer surfaces, these deposits increase the burden on AC compressors.
2. They reduce heat transfer.
3. They provide food and water for bio-growth in cooling coils.

If a coil is not cleaned properly, damage by choking or breeding colonies of mold, bacteria, fungus, etc. is certain. This affects users' health. Just imagine the havoc it can cause in heavily populated areas like IT offices, call centers, BPOs, hotels, entertainment venues and wedding halls.

Modern coil designs are getting more complicated to increase cooling power. There are more fins per inch, slit fins and thin fins, corrugated fins and tubes etc. All this makes coil cleaning a difficult task.

About the Author

Mahesh Mehta entered HVAC industry accidentally, being a Textile Engineer. He started by marketing eco-friendly non-toxic imported chemicals in Western India in 1999, conforming to standards like RoHS and MIL. He then started executing turnkey orders for coil cleaning in industrial AC plants with imported specialized equipment, using a combination of mechanical and chemical cleaning. He has worked with leading OEMs for MNCs, Indian corporations, pharmaceutical, food, hotel and IT industries for deep coil cleaning, de-scaling, fin coating, environmental corrosion control, power saving, etc. He likes to work at challenging sites.

Coil cleaning should be safe and an ideal combination of mechanical and chemical cleaning. Effective chemicals will loosen the contaminants while a professional pump will flush them out without any mechanical or chemical damage to the coil. Dry contaminants can be vacuumed. Use of plain water cleaning with professional pressure pumps may be adequate for major dry contamination cleaning operations but when the contaminants are oil, chemicals, food particle and bio-growth, the choice of an effective and correct chemical is very important.

Selecting the Right Pump

Professional pumps are sturdy, work longer and have various additional features that make coil cleaning easy. They also have chemical tank/ injection control on small palm sized guns, ceramic pistons, pressure gauges, auto stop, etc. User friendly pumps enable the worker to easily clean 4-6-8-10 row AHUs; he has to just aim-n-shoot without thinking of chemical mixing-stopping-running-plain water cleaning-stopping-repeat, etc. Arming the worker with professional equipment improves his productivity. The pump should have:

- Right pressure (up to 35 bar for window/split/indoor units, 80-130 bar for 4+ row coils).

Specifications:

Max. pressure	*: 35 bar-508 psi*	*Max. temp.*	*: 50°C*
Flow rate	*: 3.5 ltrs/min*		*(Inlet water temp.)*
Power supplied	*: 230/5 Hz/0.4 kW*	*Weight*	*: 9.5 kg*
RPM	*: 2800*	*Box dimension*	*: 52x31x28 (LxWxH, cm)*

Figure 1: Professional AC cleaner

Specifications:

Max. pressure	*: 130 bar-1900 psi*	*Weight*	
Flow rate	*: 8.33 ltrs/min*	*VIP*	*: 18*
Power supplied	*: 230/5 Hz/2.2 kW*	*Pro Laser*	*: 26*
RPM	*: 2800*	*Box dimension*	
Max. temp.	*: 60°C (Max. inlet water temp.)*	*VIP*	*: 35x22x23*
		Pro Laser	*: 34x35x max 107, min 89 (LxWxH, cm)*

Figure 2: Triplex pump

- Right water flow (approximately 3 l/m for window ACs, 8-10 l/m for 4+ rows coils).

Figure 1 shows a professional AC cleaner with a small gun and nozzle, pressure gauge, chemical inlet, water inlet with filter. The outer box is also used as water container.

Heavy duty professional pumps have higher flow and can flush out contamination faster from deep areas. *Figure 2* shows a triplex pump with ceramic pistons, pressure adjustment, built-in detergent suction, pressure gauge, electric motor with thermal protector, high/low pressure head with pencil and jet fan settings, high pressure hose, gun and lance.

Table 1 shows what kind of pump may be used where.

Table 1: Types of cleaner pressure pumps

S. No.	Type	Where to be used	Precautions
1	Hobby pump	Home use, hard surface cleaning	Not suitable for HVAC cleaning
2	Professional low bar pressure	Useful for window, split, cassette etc. with small gun	Avoid working long time or on deep coils
3	Professional high bar pressure	AHU cleaning for 4/6/8+ rows, extra accessories help other works	Avoid rotojet nozzle, low angle spray
4	Vacuum cleaner	For removing and collecting loose dust, debris	Avoid blower sending contamination inside the coil

It is essential to have the right size gun and various accessories to support the operation:

- Aerosol type pressure spray is a must to reach deep in the coil, without damaging the fins.
- Built-in chemical tank or suction line, for easy spraying of chemical.
- Lightweight and easy mobility.
- Easy operability; spray should be in aerosol form and should not damage the fins even when working 'point blank'.
- Extra accessories can be: curved lance to help work at inaccessible areas like heights and angles, mechanical tube cleaner to help clean soft internal tube scale and drain soft deposits, turbo jet to clean hard surfaces, etc.

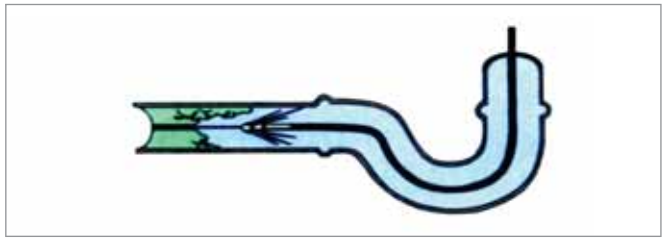


Figure 3: Mechanical tube cleaner

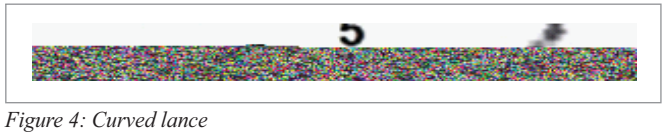


Figure 4: Curved lance

Hobby pumps should not be used in lieu of professional pumps. The former are used for cleaning hard surfaces like, sidewalks, bikes, cars, etc. Their long gun with high pressure and high water flow can easily damage the fins permanently, when working in inoperable situations.

Selecting Coil Cleaners

Any cleaning operation ought to be a combination of mechanical and chemical cleaning. The latter softens the contamination, and the former flushes it out from the three dimension coil. The ideal chemical should be eco-friendly, bio-degradable, non-toxic to human beings and metal safe. It should act only on rust, scales, oxides, oil and grease and be safe on metal, paints, plastic and rubber. It should conform to relevant international standards (US MIL, Ford, RoHS etc.). If it is compact (high dilution ratio of 1: 20/50/80/100 with water against 1:2-4 of ordinary chemical cleaners), it would save storing and hauling costs.

Choose a product suitable for the application: acidic, alkaline, neutral, water based solvent (degreaser) or bio-growth controller. *Table 2* compares the commonly used cleaners.

Table 2: Types of chemical cleaners

S. No.	Type	Where to be used	Precautions (always follow supplier's instructions)
1.	Acidic	Condenser coils, fin brightening	Be careful to use inside house; use protective gear
2.	Alkaline	Condenser/cooling coils/removal of oil-grease-deposits	Avoid residue in coil; use as per suppliers instructions
3.	Bio-growth controller	Should kill major bio-growth	Strictly follow supplier's instructions
4.	Water-based solvent	DG radiator cleaning, safe on copper tubes	Follow supplier's instructions; give sufficient reaction time

Coil Cleaning Frequency

Coils working 24x7, kitchen coils, etc. require more frequent cleaning than coils working 8-10 hours. Factors to be considered include filters getting dirty, coil surface getting dirty, complaints for low cooling, etc. The frequency may range from a 15 days cycle to 2-4 cleanings per annum. Filter cleaning frequency should be more frequent – maximum 7 days; such cleaning with a pressure pump will be more effective.

Coil Cleaning Operation

Once you have the professional equipment and suitable chemicals in your arsenal, coil cleaning is a simple operation. Generally professional equipment are easy to use and do not require any additional training. Choking of 4-8 row AHU coils is a major source of complaint and if they are attached to a kitchen, banquet hall, 24 hour coffee shop or 24 x 7 IT office, bio-growth is very frequent, if not professionally cleaned. If the bio-growth colony fully covers the coils, they literally turn 'coil dead'. Several installations are changing AHU coils every 2-3 years due to such problems.

Procedure

- Switch off the unit from the mains and ensure electric points and items are safely covered.
- Ensure drains are open and do not forget to clean drain pan while wrapping up.
- Read pump operating system and chemicals handling correctly. Dilution should be done as per manufacturer's guidelines and site need. Running water source near coil is a must.
- Vacuum dry dust if possible; do not try to push dry dust in the coil which may make your task more difficult. (Vacuuming is preferred, to remove dry-loose dust prior to plain water cleaning, if equipment is available). Plain water jet cleans 80% of coil dry contamination and needs to be cleaned at this stage.
- Try to clean the coil against the flow of air, so contamination is pushed out easily, especially for 4+ rows coils.
- Chemical application can be carried out by a normal spray bottle pump used in salons, or through pump tank/chemical inlet; mixing of chemical and water is controlled from gun nozzle by pulling it out – when pushed in, only water flows; chemical does not flow through the pump, but gets mixed near nozzle. Advanced pumps have a chemical flow controller.
- Chemical spray should be in fine penetrating mist form, in variable angles. Allow working time as per supplier's direction. Chemicals should penetrate thoroughly, in fine mist/spray form, thereby avoiding damage to the fins and to avoid excess chemical use. Chemical cleaning is preferred to remove oil, grease, grime, solid dust, chemical deposits, bio-growth or any other contamination. During bio-growth cleaning goggles,

Figure 5: Cleaning in a tight space with low pressure and low water flow

Figure 6: AHU cleaning of 6 row coil with a small gun

Figure 7: AHU coil cleaning at back side

Figure 8: Mist spray of a small comfortable gun hitting an air cooled chiller coil at 90°

protective mask (N-95) and other protective gear should be worn.

- Flush clean with plain water pressure wash. This job has to be done for a long period, since deposits will come out slowly from the three dimensional coil structure. Heavily choked coil needs continuous cleaning operation for long periods.
- Repeat the process, if required.

What Happens when AHU Coils are Cleaned?

- Initially no water will come out from the other side of the coil, while a lot of dirt will be seen coming out from bottom.
- After some hard cleaning there will be a burst of water coming here and there on the back side of coils, showing the coil is slowly opening up.
- Later, water will come out continuously and slowly; when the coil is deep clean, water coming out from the bottom will be clean, and from the back side it will just come out slowly and continuously.
- Heavily choked coils (near 0 cfm, 4+ rows) take approximately 2-3 days of intense cleaning. It is possible to clean fully choked coils at site with professional deep cleaning. Fully choked split and window AC coils can be cleaned in a shorter time.

Reasons for Poor Coil Cleaning

The author has observed, in the course of his professional work, a large number of sites where coil cleaning was poor because of the following reasons:

- Low budget for coil cleaning.
- Inadequate time for coil cleaning operation, up to 2-4 hours per quarter; 24 x 7 working coils require 6-8 hours cleaning per month.
- Improper equipment, wrong chemical choice, non availability of chemicals, e.g. bio-growth cleaner. A new Mumbai based 7 star hotel had to change coils within two years of operation due to mold formation.
- Bad water quality; fluorides, ions, chemicals and detergents can cause pitting and/or coil leaks, which may allow growth of scale leading to the insulation and bacterial growth.
- Site difficulties: At a 5 star hotel, medium sized AHUs were hung from the ceiling in a foyer to save space. At some other sites, one needs to crawl to reach the AHUs. There is no provision for cleaning water and drainage near AHUs.
- Condenser coils installed in a building duct are often covered with bird droppings and feathers, which produce corrosive gases, affecting brazing joints.
- Wrong filter installation allows air short cycling and access to lizards, cockroaches, etc. Regular filter cleaning with pressure pump and water is also a must.
- At a pharmaceutical site, absence of AHU drain trap allowed cockroaches to roam freely in AHUs, which brought hungry lizards in for their feast, leaving carcasses all around the sterile area.
- Lack of knowledge: A maintenance head told me that new coils do not require cleaning for the first few years; they had to replace a majority of the coils within two years of operation.

Some Good Practices

- Choked condenser coils are a major source of cooling complaints and compressor failures during peak summer months. One may use plain water cleaning with a suitable high pressure pump. Chemicals are required only when deposits of oil, grease or scales are found.
- 24x7 working 4+ row cooling coils, coils serving R&D labs,

Figure 9: Professional deep coil cleaning restores 6 row coils to original condition

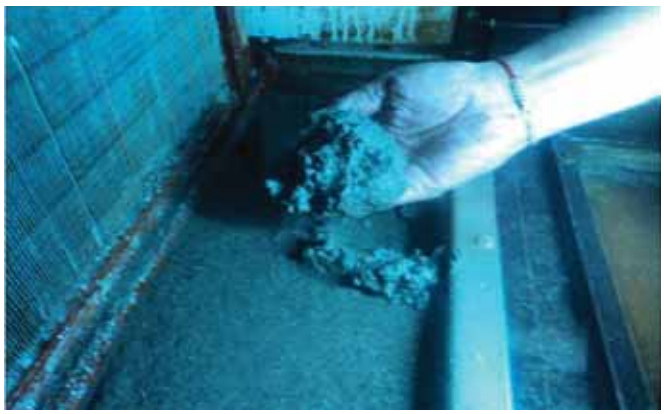


Figure 10: Mold cleaning in the tray after deep coil cleaning

beauty parlors, textile showrooms, pathology labs, multi cuisine restaurants and laundries have heavily contaminated air, and cleaning should be frequent and intense in such situations.

- Generally the coil cleaning job is outsourced. It is important to ensure proper supervision, check and compare data before and after cleaning. Identify coils as per usage, contamination deposits and then plan cleaning frequency on need basis.
- Pharmaceutical companies need to be sensitive about the US FDA norms. This is generally a nelected area.
- Coil cleaning can be reduced if the fins are chemically coated whereby their smooth surface does not allow contamination build up and is washed away with condensate water.
- Mold grows anywhere, and only requires water and food particles to grow. It is carried as pollen particles through air, starts growing in 48 hours and grows up to 28 lakh cells per night, as per published data. Choked wet drain pans and improper cleaning are some of the major causes of resistant mold. Staff should be trained to check vigorously for mold, and while cleaning should wear protective mask (N-95). Cleaning should be very intense with right chemical and pressure pump. Dead cells are also dangerous to human beings. See *Figure 10* and *11*.

Figure 11: Effects of mold

Conclusion

Air carries heat, moisture, contamination and viruses, apart from other things that get deposited in the HVAC system. Energy consumption and IAQ are severely affected due to poor cleaning practices. Since people are now staying more indoors (office and home), their health is affected due to HVAC pollutants. Coils have to be deep cleaned or they may be permanently damaged. Mold and bacteria can multiply in a poorly maintained system, posing health risks like asthma, nausea and more.

Information technology company:

DEEP Coil Cleaning + Hygiene 99.9999%

Restoration of 15 year old choked coil

With Imported Professional Pumps + Imported Coil cleaners

Ecochem, Mumbai.

Cell: +91-9322294436

ecochemplus@hotmail.com

Note: Closely Watch *Photo No.3* & see the difference

Photo1: Original coil condition at time of opening

Note: Bright Streaks seen on coils are Bio Growth column

Photo2.: Original coil condition

Note: Dark Fins & Bright Streaks seen on coils are Bio Growth colonies

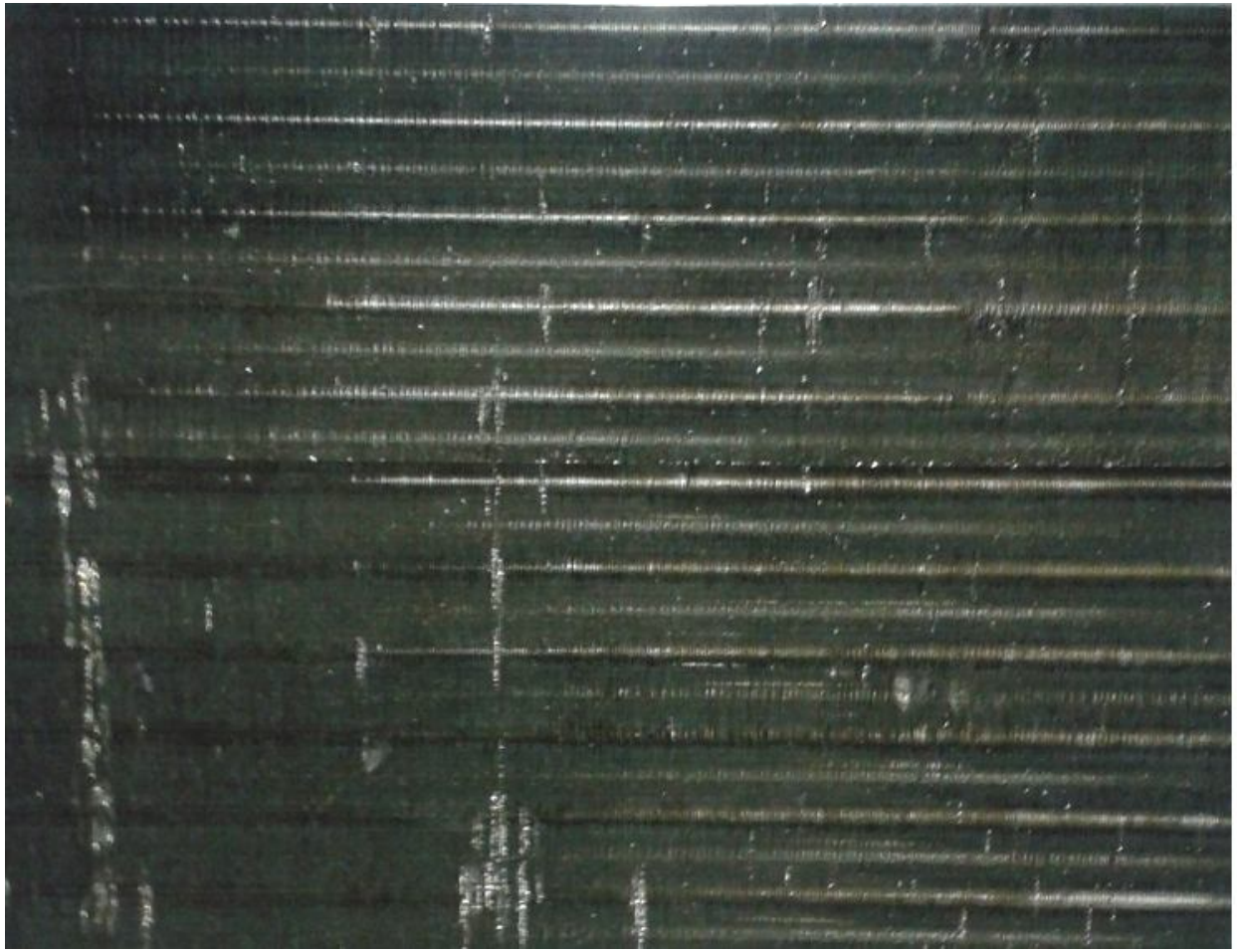


Photo3: Deep Coil cleaning process being carried out from other side of coil.

Note: Effect of deep chemical cleaning visible, see the deep 3 rows been seen at time of cleaning

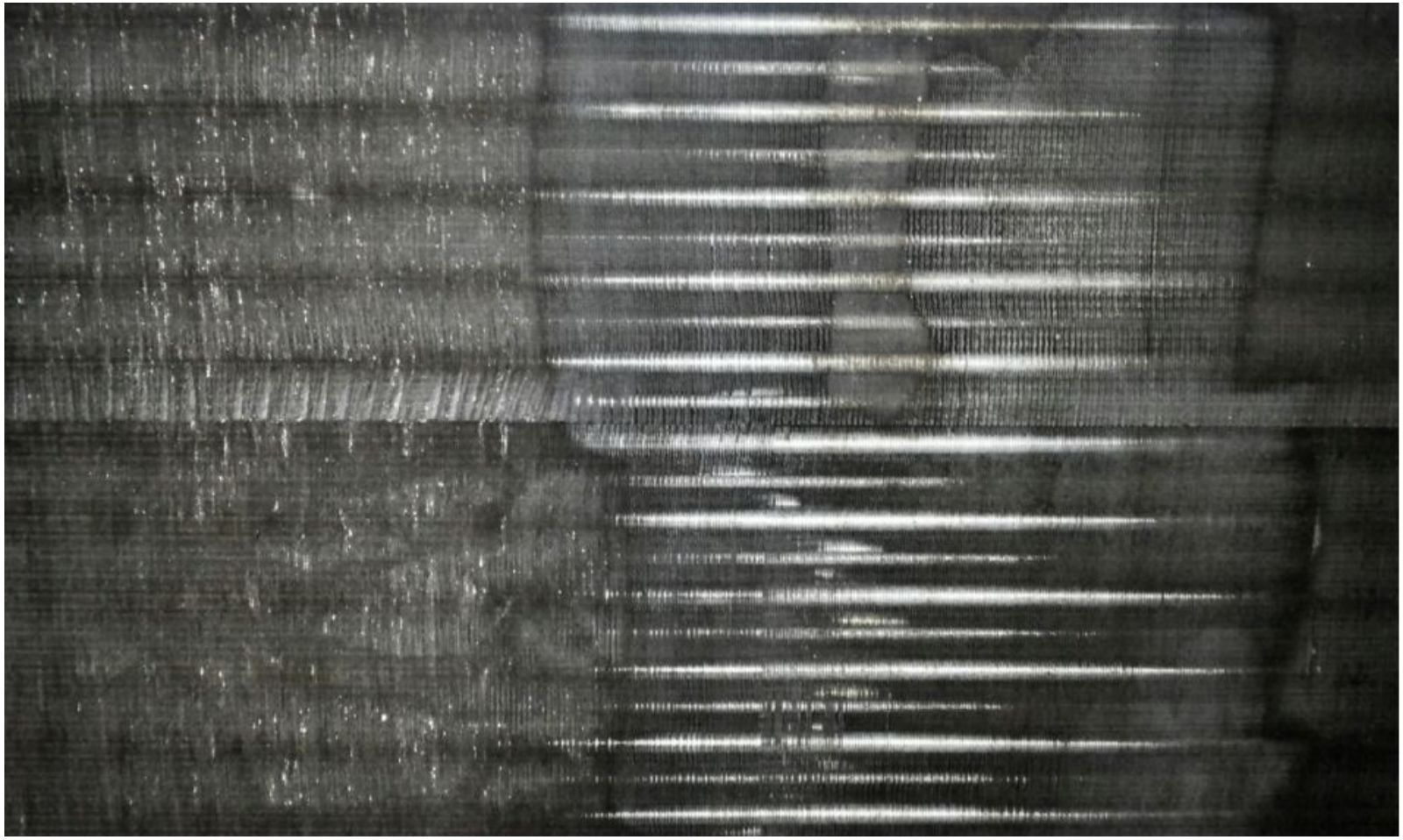


Photo 4: Inside of coil photo during process.

Note: Dead Bio Growth, collected in pan

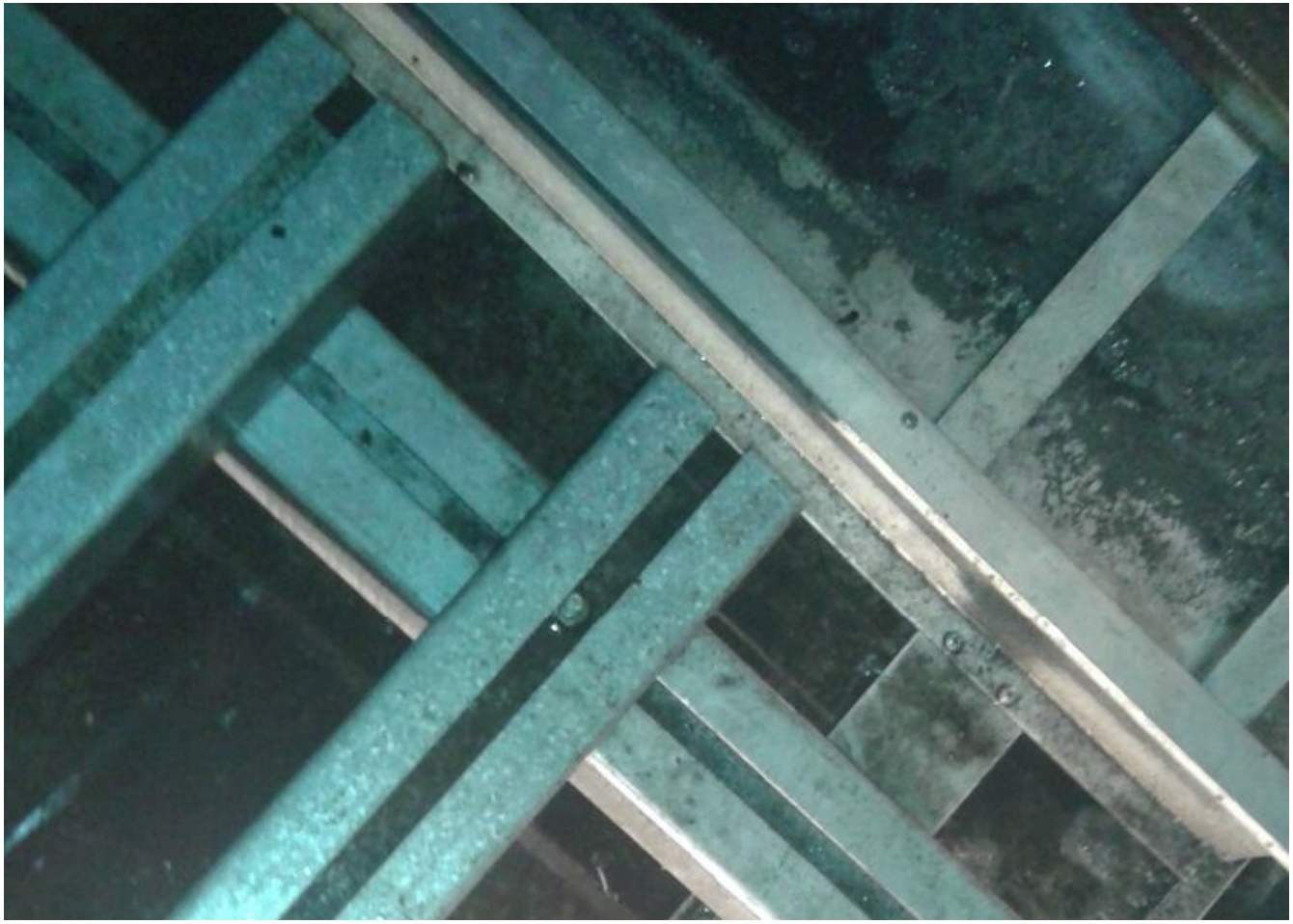


Photo5: Front side of coil after cleaning, final stage.

Photo 6: Clean coil photo

Note: Bright Fins & tubes, powers heat transfer faster, up to 3 rows deep visibility

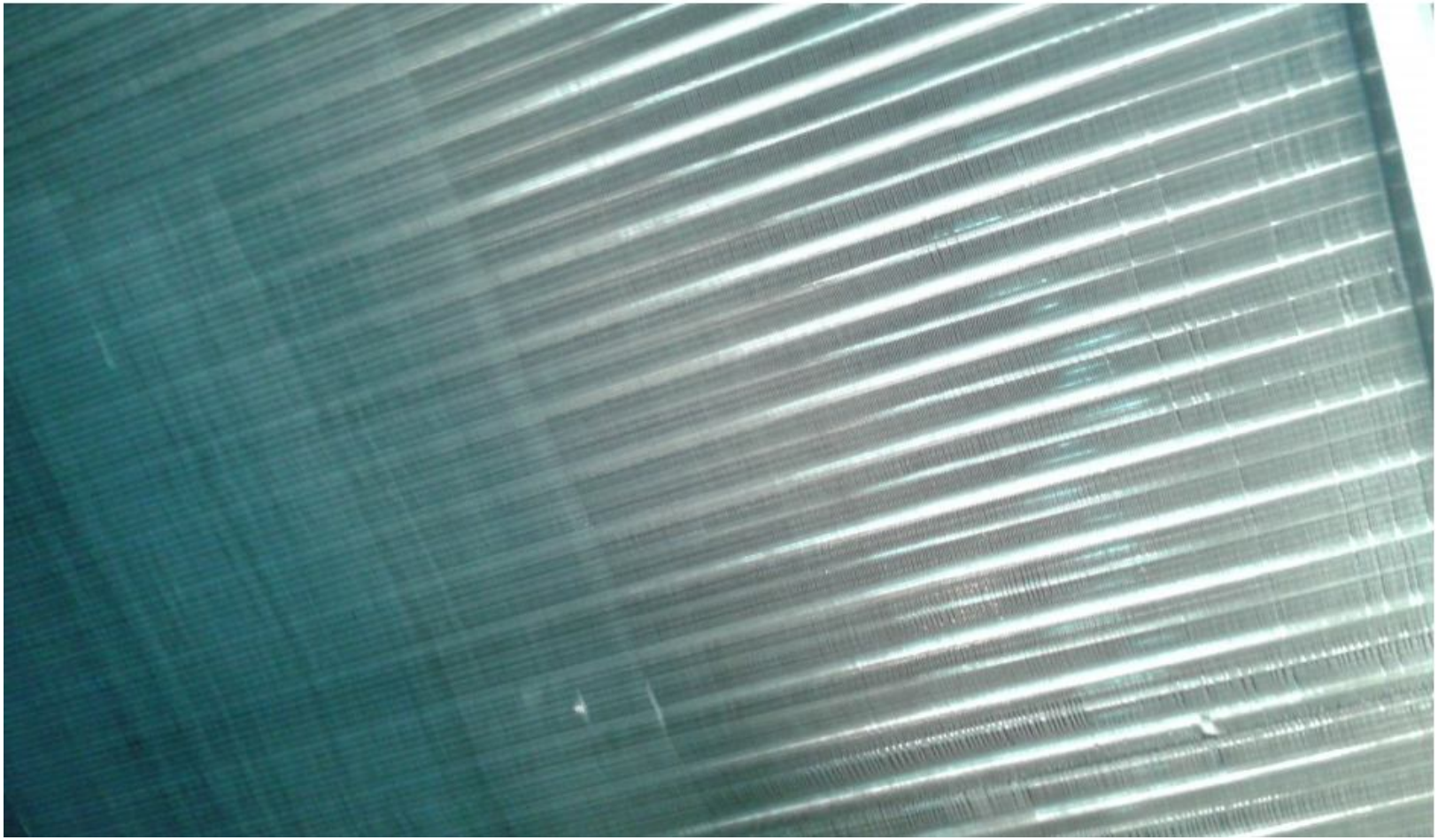


Photo 7: Site photo with clean coil

Note: Clean coil + Soiled floors, water flew up to 6 feet away from coil surface at final stages

Results of Professional Cleaning:

- Restoration of original coil efficiency
- Energy savings & Hygiene will follow.
- Reduce Cooling complains
- No damage to fins, tubes, equipments
- **E-x-t-e-n-d-s** equipment Life
- Avoid contamination / bio growth on coils
- **Recover** cleaning expenses much faster
- You can concentrate on other hot issues

Why our Coil cleaners only ?

Imported chemicals,

* Eco-friendly, Biodegradable,
* **Can work in 500 PPM hard water!,** All over country we know water condition, **get same results everywhere!**
* **Highly concentrate,** more economical, less hauling & less storage space
* Acts only on Rust, Scales, Oxides, contamination,
* Safe on Metals, Paints, Plastic, Rubber,
* Non Toxic to human beings!
* Listed in NATO MCRL list.
* RoHS, etc
* Wide Range : Acidic, Alkaline, Self Rinsing, Neutral, Bio Growth controller, Water based Solvent etc!

Fins Coatings for AHUs & Condenser coils

- *AHUs turns to Self Cleaning Coil!!!*
- *Useful for 4+ rows coils, 24x7 working coils, reduce coil cleaning*
- Resist Sick Building Syndrome!
- Resist Saline, Industrial, Environmental & Bio Growth attacks.
- Does not effect heat transfer, delta T.
- Cooling coil turn Self Cleaning coil, works 24x7
- All Future coil cleaning with plain water only!
- Coating does not support Bio Growth!
- Coating life of 24 / 60 / 84 months
- Avoid condenser & cooling coils fins corrosion
- Coating possible on New & old coils, later requires very deep coil cleaning.

Start Your Savings Now!

From

ECOCHEM, Mumbai.

You'll be glad you did!

Cell : 09322294436

ecochemplus@hotmail.com

Mahesh Mehta.

VAPPRO
VAPOUR CORROSION INHIBITOR
VBCI BIODEGRADABLE VCI

ECO FRIENDLY
SUSTAINABLE
BIODEGRADABLE

ISO 9001 Quality Management System

ISO 14001 Environmental Management System

MADE IN SINGAPORE

VBCI Series- A class of environmentally friendly corrosion inhibitors for a cleaner, greener, better tomorrow.

Vappro VBCI Sphere Absorption Pouch

Absorbs and Neutralises Corrosive Gas-H_2S

Introduction

Hydrogen sulphide (H_2S) is a common byproduct in sewerage treatment plants, primarily arising from the anaerobic decomposition of organic matter containing sulphur. In these environments, the lack of oxygen allows sulphur-reducing bacteria to thrive, metabolizing sulphate and organic sulphur compounds present in sewage and converting them into hydrogen sulphide.

This gas, notorious for its characteristic rotten egg odour, can pose significant health and safety risks, necessitating careful monitoring and management within treatment facilities.

The production of hydrogen sulphide typically occurs in areas with stagnant or slow-moving sewage, such as in sewer lines, sludge digesters, and sedimentation tanks.

Understanding the sources and conditions that foster H_2S formation is crucial for effective odour control and corrosion prevention in wastewater treatment systems.

The impact of hydrogen sulphide (H_2S) on corrosion depends on various factors such as concentration, temperature, pressure, exposure time, the nature of the material being corroded, and the presence of other corrosive agents.

Hydrogen sulphide (H_2S) is a corrosive gas that can cause damage to various materials, including metals. The concentration at which H_2S starts to cause corrosion can vary depending on several factors, including the material in question, the environment, and the duration of exposure. However, some general guidelines can be given:

VBCI Series – A class of environmentally friendly corrosion inhibitors for a cleaner, greener, better tomorrow

VapproSphere Absorption Pouch

Corrosion can begin at very low concentrations. For sensitive electronic components, even H_2S levels as low as 0.1 to 1 ppm can cause significant corrosion over time.

Copper and silver are particularly susceptible to tarnishing and corrosion by H_2S. Silver tarnishing can occur at concentrations as low as 0.1 ppm, and copper can begin to corrode at slightly higher concentrations, typically around 1 to 3 ppm.

Iron and steel are also affected by H_2S, though typically at higher concentrations. Iron and steel corrosion can start at concentrations of 5 to 10 ppm and becomes more significant at higher levels.

In general, in atmospheric conditions, noticeable corrosion can occur at H_2S concentrations of around 10 ppm and above, especially if the exposure is prolonged.

Description

The **VapproSphere** is a product specifically designed to safeguard silver, copper, and various ferrous metals from corrosion, particularly in environments where hydrogen sulphide (H_2S) gas is prevalent, such as in sewage treatment plants. Packaged in a breathable Tyvek material pouch, the **VapproSphere** is available in convenient 20-gram and 100-gram pouches, making it easy to apply in different settings.

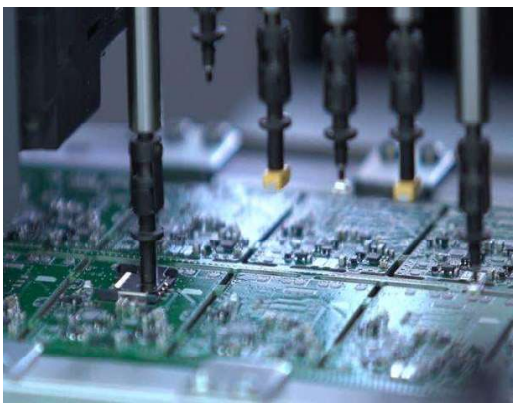
The **VapproSphere** is particularly effective in protecting electronic equipment and electrical junction boxes from corrosion. When used alongside other Vappro emitters, it offers enhanced protection. The product works by absorbing H_2S and neutralizing it within the equipment's enclosures, thereby preventing the gas's corrosive effects.

The **VapproSphere**'s dual-action mechanism, combining absorption and neutralization, ensures the longevity and functionality of sensitive components and metal surfaces, even in harsh environments with a high risk of hydrogen sulphide exposure. This design and packaging of the **VapproSphere** make it an indispensable tool for preserving the integrity and lifespan of critical infrastructure and equipment in industrial and sewage treatment applications.

Benefits

Ease of application

- **Dual-action mechanism-** absorbs and neutralises corrosive H_2S, preventing corrosive damage
- **Effective Corrosion Protection:** Safeguards silver, copper, and ferrous metals from corrosion caused by hydrogen sulphide (H_2S) gas.
- **Breathable Packaging:** Packaged in a breathable Tyvek material pouch, ensuring optimal performance.
- **Convenient Application:** Available in 20-gram and 100-gram pouches for easy and flexible application in various settings.
- **Versatile Use**: Ideal for environments with imminent H_2S presence, such as sewage treatment plants.
- **Electronic Equipment Protection:** Highly effective in protecting electronic equipment and electrical junction boxes from corrosion.
- **Enhanced Protection:** Provides superior protection when used in conjunction with other Vappro emitters.
- **Longevity of Equipment:** Helps maintain the integrity and functionality of sensitive components and metal surfaces.
- **Critical Infrastructure Maintenance:** Essential for preserving critical infrastructure and equipment in industrial applications.
- **Ease of Use:** Simple to apply, making it accessible for various maintenance tasks.



VapproSphere Absorption Pouch

How to apply?

There are several methods commonly used to detect hydrogen sulphide (H_2S) in enclosures such as confined spaces, industrial facilities, and offshore installations. These methods vary in their principles of operation, sensitivity, and suitability for different applications. Here are some common methods for detecting H_2S in enclosures:

1. **Direct-Reading Gas Detectors:** Direct-reading gas detectors, also known as portable gas detectors or gas monitors, are commonly used to provide real-time measurements of H_2S concentrations in the air. These handheld devices use electrochemical sensors to detect H_2S levels and provide instant readings to the user. Direct-reading gas detectors are easy to use, portable, and suitable for on-the-spot monitoring in various industrial settings.
2. **Colorimetric Tubes:** Colorimetric tubes are another popular method for detecting H_2S in enclosures. These tubes contain a chemical reagent that changes colour in the presence of H_2S. By drawing a calibrated volume of air through the tube using a hand pump, the user can determine H_2S concentrations based on the colour change observed. Colorimetric tubes are simple to use, cost-effective, and can provide semi-quantitative measurements of H_2S levels.

Determine the Required Number of VapproSphere Pouches:

Recommended Protection Guidelines: Refer to the VapproSphere product guidelines or manufacturer's recommendations to determine the number of pouches required based on the recorded H_2S concentration.

General Rule of Thumb: Typically, 20 grams of **VapproSphere** pouch may be sufficient for enclosures with low to moderate H_2S concentrations. Adjust the number of pouches accordingly for higher concentrations.

For example:

1 to 5 ppm H_2S: 1 pouch of 20 grams per cubic meter of enclosure space.

6 to 10 ppm H_2S: 2 pouches of 20 grams per cubic meter of enclosure space.

11 to 15 ppm H_2S: 3 pouches per cubic meter of enclosure space.

Above 15 ppm H_2S: Consult with the manufacturer for specific recommendations.

Available Packaging
20-gram pouch and 100-gram pouch

VapproSphere Absorption Pouch

Prepare the Enclosure:

Ensure Cleanliness: Clean the enclosure to remove any existing corrosion or contaminants that might interfere with the **VapproSphere**'s effectiveness.

Seal the Enclosure: Ensure the enclosure is sealed properly to prevent additional H_2S from entering and to maintain the effectiveness of the **VapproSphere** pouches.

Place the VapproSphere Pouches:

Strategic Placement: Distribute the VapproSphere pouches evenly throughout the enclosure. Place them near sensitive components, electronic equipment, and areas prone to corrosion.

Avoid Obstructions: Ensure that the pouches are not obstructed and have adequate exposure to the enclosure's air.

Monitor and Maintain:

Regular Inspections: Periodically inspect the pouches to ensure they are intact and functioning as expected.

Replace as Needed: Replace the VapproSphere pouches according to the manufacturer's recommended intervals or when they appear to be fully saturated and no longer effective.

Replace the VapproSphere pouch every 1 to 2 months under typical exposure conditions to 10 ppm of H_2S. This interval ensures effective H_2S removal and prevents saturation of the VapproSphere material.

Adjust the frequency based on actual H_2S levels, airflow rates, and specific product capacity data. Regular monitoring and testing can further refine this replacement schedule. Consult the manufacturer if unsure

Recheck H_2S Levels: Regularly measure the H_2S concentration to ensure it remains within safe limits and adjust the number of pouches if necessary.

Record Keeping:

Document Placement: Keep a record of the number of pouches used, their placement, and the initial H_2S levels.

Monitor Changes: Track any changes in H_2S levels and the condition of the pouches over time to ensure ongoing protection.

By following this procedure, you can effectively use VapproSphere pouches to protect against H_2S-induced corrosion, ensuring the longevity and functionality of your equipment and infrastructure

Magna International Pte Ltd
10H, Enterprise Road,
Singapore 629834.
Tel (65) 6786-2616
Fax (65) 6785-1497
Email info@vapprovbci.com
Web http://www.vapprovbci.com

Follow us on social media for regular updates and news.

https://www.facebook.com/MagnaInternationalPteLtd/
https://www.facebook.com/vapprovci/

Headquarters ***Regional Offices***

Singapore ***Australia*** ***Canada*** ***Japan*** ***Mexico*** ***South Korea***