

## **APPLICATION OF RODREPEL® IN AREAS OF DEFENCE AND AEROSPACE**

Defence and Aerospace are two major sectors defining the growth and development of a nation state. It is needless to describe how important these areas are to a nation's security, integrity and prosperity. Billions of money is allocated every year for advancement of these sectors. A large portion of a nation's budget is made available for the establishment of the defence capability necessary to face the threats and challenges. As the demand for precision weaponry and hi-tech electronic warfare equipments is increasing, the need for their withstandability to harsh outdoor elements, extreme heat and heavy loads as well as protection from rodent attacks is also very important.

Rodents being ubiquitous creatures are present in large numbers at various outlight units of defence, on warships, dockyards and workshops, victualling stores and sometimes also find their way to aircrafts causing a lot of loss and damage. They not only eat the stored food but also attack mechanics like wires and cables, pipes or plastic components used in various equipments, which can lead the safety of people and the electrical equipment in danger.

Wires and cables have a long and distinguished record in high priority defence programmes spanning all branches of armed forces. The wire industry finds an application in a great diversity of products, among them are harbor defence nets , aircraft control, power and lighting cables, field signal wires, telephone and telegraph wires and cables, wire rope slings for lifting guns, tanks, shells etc, bomb demolition wires, precision rolled strips for instruments, degaussing cables for repelling magnet mines , many sorts of wire rope and electrical cables for use on battle ships, anchor cables for captive balloons, building and power and lightning cables for vital new defence plans and

for army cantonments, screen cloth for army camps and myriads, other wires and wire products.

Warships contain a massive network of wires and cables running throughout the structure. These wires and cables used in a warship serve a greater purpose than just transferring electricity. They form the lifeline of the ship conducting and integrating all operations ranging from communication to navigation, weapon system and warning system.



The wires not only power the computers, machines, aircrafts and different equipments that form integrative part of any warship but are also required to control various operations on a ship from a control room . Internal communication through broadcasting system and external through transmitters and receivers is executed through a network of cables. These days firing of missile/gun are electronically controlled from a control room and the connection is through different types of wires and cables. Navigation and warning system are also both electrically and electronically controlled.

Similar to war ships are merchant ships, submarines and aircrafts which have a similar set up of connections employing wires and cables.

Damage to this wiring or cabling network due to a rodent attack could disrupt the whole functioning of a ship and tracing the exact location of default is a painful exercise as they spread over the entire body of the ship. Even if the damage is detected and repaired the recurrence due to frequent rodent attacks renders the whole exercise futile. Thus a full proof protection against rodents is required for the cable network which can be rendered so by making the cables anti rodent.

On a dockyard various ships are interconnected or connected to the base units by means of Optical Fibre Cables. These OFCs are used for various purposes like data transfer, Image transfer, Video conferencing, and different defence exchanges. Damage to even a single fibre could be very catastrophic. Hence a rodent protection is a must for these cables too.

Military logistical operations use enormous amounts of packaged food around the globe. Various victualling stores (cook houses, pantries, canteens) house this packaged food for months together. For safety and sanitation, this packaged food requires protection against rodents. The food is packaged in a moisture proof container like metallic cans or zip plastic pouches. To prevent infestation of insects and rodents in the victualling stores, it is essential to render these packages and containers rodent aversive.

Rats also pose a major threat to aircraft avionics. Aircraft avionics are an indispensable part of today's airfare. The telecommunication meant for aircraft (civil and military) consists of a vast array of devices for critical air to ground communication systems for safe passages. On board communication is done by public address systems and aircraft intercoms.



For safe flight, there are various navigation sensors and aircraft flight control systems fitted in an aircraft. The advent of “fly by wire” and electro actuated flight surfaces (rather than the traditional hydraulics) has massively increased safety. To supplement air traffic control many aircrafts use TCAS (Traffic Collision Avoidance System). To help avoiding collisions with terrains the aircrafts use systems like GPWS (Ground Proximity Warning System) often combined with a Radar altimeter. To assist aircraft flying at night or in instrument meteorological conditions weather radars and lightening detectors are used.

In military aircrafts and equipments specifically designed cable systems are successfully deployed in various applications such as fire control systems, ground control systems, line of sight communication systems, security and surveillance systems and radar systems.

UAVs( Unmanned aerial vehicles) are remote controlled from the base or they fly autonomously based on pre-programmed flight plans based on complex dynamic automation systems involving usage of electrical and electronic means.

These important applications require to be secured from rodent attacks as they involve immense amount of money and technology which cannot be risked at any cost.

Even in civil aviation the presence of rodents can lead to critical situations.

The gravity of this point can be felt by learning about an incident which happened not long ago, in April '06 on Boeing 767 American Airlines passenger plane.

It was reported by KSDK News Channel that on board Boeing 767 passenger plane there were hundreds of mice running on the floor causing chaos everywhere. The mice feces were found all along the edge of the whole aircraft posing a threat of health hazard due to infestation to the passengers and cabin crew. The workers on board this plane found rat nests in air vents and dead mice in emergency oxygen masks. It was reported that these mice also affected the mechanics of the airplane by eating the insulation and chewing through the wires, leading to a possibility of fire in the cabins endangering the lives of all the people on the plane. Along with the wires and insulation, these mice also chewed on cargo bins and passenger cargos leading to irreplaceable losses.

This incident reflects the potential of the catastrophic mishap and highlights the importance of the usage of anti rodents in airplanes. These anti rodents can be used to protect the wires and insulation thus eliminating fire hazards and loss of life. To protect the passenger cargo, the cargo nets used to cover these should also be rendered rodent aversive.



The possibility of insects or rodents on board affects the safety of the airplane and passengers. To avoid this, many-a-times the airplanes are sprayed with certain pesticides which lead to several health problems ranging from nausea to convulsion to more severe ones like birth defects and other genetic damages in future. According to some scientists, the practice of disinfection using pesticides endangers the health of both passengers and aircraft. Research in recent years by the National Research Journal and National Institute of Environmental Health Sciences and other groups has linked various ingredients in common pesticides to a variety of ailments like respiratory problems, skin reactions,

nervous system damage, endocrine disorder, increased sensitivity to other chemicals and cancer. These pesticides while dangerous on land cause even greater harm when used on planes. The pesticides break down slowly in the enclosed poorly ventilated aircraft and the passengers get directly exposed being sealed inside a chamber that has been gassed and sitting there for hours.

Therefore the use of pesticides on planes or any other places with direct human contacts should be totally avoided. Rodrepel® proves itself to be a safe and more effective alternative to pesticides as it is a completely non-toxic product which employs sensory mechanisms to deter rodents and animals without harming the animal or humans in any way.

The significance of rodent proofing in areas of defence and aerospace can be understood clearly from the above discussion. Application of rodent proofing in these areas is spread over a wide range of products such as wires and cables, food packaging, army tents and tarpaulins, aircraft avionics etc. Thus to render the efforts of the government fruitful and to do justice to the monetary investments done on defence and aerospace, it is absolutely necessary to pay equal attention towards the safety of related items from external damages like rodent attacks.

Rodrepel®, a chemosensory irritant type of an antirodent is the best product to be used for such purposes as it is very effective in its action to deter rodents and is a complete non-toxic product complying with all environmental regulations.