WHITE PAPER

Phasing out the use of PVC plastics

A natural step for market innovators

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AXIS COMMUNICATIONS

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1 Introduction

Sustainability is an important and integrated part of business operations at Axis and plays a significant role in our successful growth. We are therefore committed to ensuring that all of our business is conducted in a responsible, transparent, and trustworthy manner. Axis Communications is one of very few surveillance technology companies that adheres to the UN Global Compact guidelines, as well as export rules and regulations. Our dedication to providing sustainable and environmentally friendly solutions is rooted in the founding ethos that the company was built on; creating a smarter and safer world, both in terms of the technology we provide, and the way in which we provide this to the market.

Corporate social responsibility (CSR) is the platform the entire company rests upon, creating an open organizational environment with a strong and dynamic corporate culture. We feel this is an integral factor behind our success as a business. Following the signing of the UN Global Compact guidelines, we inform our suppliers and partners of our sustainability work, and what is expected from them as part of the Axis Code of Conduct. This code contains the business ethics requirements to which they must adhere, in accordance with the UN Global Compact's ten principles regarding human rights, labor, the environment, and anti-corruption.

At Axis, we aim to take sustainability into account in all business processes and throughout the entire value chain. We conduct our sustainability work in four areas: economic responsibility, business ethics, environmental responsibility, and social responsibility. Sound corporate governance forms the basis for our sustainability work. We strive to minimize our environmental impact, promote a healthy working environment, fight corruption, and prevent breaches of human rights. This commitment goes hand-in-hand with continuous efforts to develop new, smart, more environmentally friendly and energy-efficient network video products and solutions, including the phasing out of polyvinyl chloride (PVC) from our products.

2 Plastics: an unsustainable innovation

In more ways than most compounds, plastics have revolutionized the world and have largely changed the way we live for the better. From offering a hygienic method of handling food and water, to halting the spread of dangerous infections in the healthcare environment, plastics have been providing answers to complex situations since 1907. However, while as a society we are fully aware that the overuse of any natural resource is bad for long-term development and is not a sustainable way of doing business, we are now dependent on plastic in our daily lives.

One of our long-term company objectives at Axis is to phase out the use of PVC from our products. Axis was founded on the principles of innovation from a technological, health, and sustainability standpoint. Increasing business intelligence via smarter network solutions has been a driving force on the technological front. In 1996, Axis developed the world's first network camera; since then, it has continued its commitment to innovation and development to make the world a smarter and safer place. Today, there are alternatives to PVC that can be used in almost every field of use without compromising on quality. For organizations on the road to implementing long-term sustainable innovation, these must be given greater consideration.

When considering the potential impact of plastics on human and animal health, it is clear that our continued vision of phasing out PVC plastics from our cameras falls under all areas of our sustainability and corporate social responsibility initiative. PVC plastics, alongside the additives it contains, are causes for concern when it comes to fire safety, cancer, asthma, and humans' ability to reproduce. PVC is also a difficult material to recycle and is often subject to improper waste management. This leads to dangerous plastic filling landfills and unfiltered burning causing a considerable impact to the environment.

3 PVC: what you need to know

PVC (often referred to as vinyl in the USA) is a plastic material consisting of the polymer polyvinyl chloride. The plastic raw material for PVC is a white brittle solid that consists of long carbon chains with hydrogen and chlorine atoms. During production of PVC, many chemical substances are used that produce potent carcinogens and toxins such as dioxins and chlorine. At the end of its life it is difficult to recycle, and difficult for nature to break down. Although PVC is one of the most commonly used plastics in the world, due to its brittle nature it is not an entirely useful plastic when seeking flexibility without additives.

The additives in PVC plastic that help it to achieve its flexible and impact-resistant nature are known as plasticizers or softeners. One group of chemical substances often used is phthalates. This is added during the production process but is not chemically bound to the PVC plastic, meaning it can eventually be released into the surrounding environments. In 2015, 80-90% of plasticizers produced worldwide were used to make flexible PVC.

In 2014, phthalates accounted for approximately 70% of the total consumption of plasticizers, a reduction from approximately 88% in 2005. The number is expected to continue decreasing globally. This is due to new material alternatives and increased legislation. In 2019, four substances, all phthalates associated with PVC, were added to EU directive 2011/65/EU Restriction of Hazardous Substances Directive (RoHS), limiting the use of these substances in all electronic products.

4 PVC: the risk

There are two key factors to consider when evaluating the environmental and health risks PVC plastics pose. The first of these is the raw material itself, and secondly, the phthalates that are added to make it usable in more applications. For example, flexible PVC with phthalates is commonly used in cable production and wire insulations.

A major concern with PVC plastics is fire safety. While burning, polyvinyl chloride can release hydrogen chloride (HCl) fumes, which pose a serious health concern. Furthermore, when water is used to extinguish the fumes, they will transform into hydrochloric acid. This is corrosive and can cause significant damage to its immediate environment – including surrounding equipment and people. Unless cleansed thoroughly, the acid can enter concrete and corrode the rebar structure. This means that, years after a fire, there could be disastrous consequences including the sudden collapse of concrete structures, such as garages or stairwells.

When PVC is burned, either in an incinerator or an open fire, dioxin is formed. This is a known human carcinogen and among the most toxic chemicals in the world. Firefighters that have encountered dioxin in the past are known to be at a higher risk of developing cancer. Dioxin is transported through the wind from accidental fires or burning waste material, resting in its surrounding environment and accumulating in plants, animals, and ultimately humans.

In areas where smoke can cause a serious safety risk such as indoor fires, it is now common practice to use PVC free cables when building electrical and communication infrastructure. As of yet, there are no legal demands on manufacturers of security cameras or other electrical equipment, but the choice of unsafe and dangerous materials is hard to defend when safer, sustainable alternatives are available.

5 The root factor: phthalates

Plastic products that are utilized in our everyday environments, including the workplace and at home, are known to release phthalates into their immediate surrounding. This is because the substances are not chemically bound to the plastic. Phthalates are released during a product's entire life cycle, meaning anybody can be exposed to phthalates through the air, what they eat, and what they touch.

While phthalates are commonly found in a range of products, only a small number have been studied in depth. Those that have are known to be linked to: male and female fertility issues, breast cancer, asthma, attention-deficit hyperactivity disorder, obesity and type II diabetes, low IQ, neurodevelopment issues, behavioral issues, and autism spectrum disorders.

Children and pregnant women are considered to be the most at risk from PVC products and have higher concentrations of phthalates in their bodies. For young children, the higher concentration is most likely due to their toys and also the dust they come into contact with on the floor. The dust is often loaded with phthalates escaping from common sources of PVC such as electronics and plastic floors.

6 Compliance to current and future legislation

Many rules and regulations exist around items used in the security industry, including REACH (Registration, Evaluation, Authorization and Restriction of Chemicals), RoHS (Restriction on Hazardous Substances), and WEEE (Waste Electrical and Electronic Equipment Recycling). Two of the more common questions surrounding regulation and compliance focus on RoHS and REACH. As both stem from the European Union, these are often confused as the same thing.

To summarize, RoHS is an EU Directive (2011/65/EU) prohibiting or restricting the use of certain heavy metals and flame retardants in electrical and electronic products on the market. REACH is the European Union's regulation on chemicals and their safe use. REACH applies to all chemicals, both chemical substances used in industrial processing and in daily life. It applies not only to production and use of chemicals, but also to articles and products. For Axis, this means there is an obligation to inform customers if products contain substances listed on REACH's candidate list[1], a record of substances that are identified to be of very high concern. These substances are candidates for a possible ban in the future.

Many phthalates used in PVC have already been added to REACH's candidate list. Four of these[2] were included in RoHS in 2019, and are banned or restricted in electrical products. Axis aims to stay one step ahead in terms of adhering to future legislation, which is why it has been a priority since 2009 to remove PVC from our products.

[1] Available from *http://echa.europa.eu/*

[2] Butyl benzyl phthalate (BBP), bis(2-ethylhexyl) phthalate (DEHP), dibutyl phthalate (DBP), and diisobutyl phthalate (DIBP)

7 Axis is phasing out the use of PVC

At Axis, it is a long-term goal to offer halogen-free solutions. A product is considered to be halogen-free (according to JEDEC/ECA JS709) if the materials used in the product contain less than 900 parts per million (ppm) of the halogens chlorine or bromine, or less than 1500 ppm of chlorine and bromine, two common substances used in electrical products. For Axis, a key step in achieving this goal is to shift away from the use of PVC-based parts in our cameras.

As a company founded with the philosophy of innovating for a smarter and safer world, the negative impact that PVC and phthalates have on the environment and human health is enough to warrant the removal of these elements. We have so far been very successful in our endeavor to phase out PVC. Today, approximately 90% of Axis cameras and encoders are PVC-free.

Although PVC-free alternatives often come at a high price, Axis ensures that this cost is not passed on to the user. This is a part of our social responsibility commitment. In the future, it is anticipated that the

cost of sustainable materials will drop as they become more commonly used, providing an even greater incentive for other organizations to begin using sustainable and environmentally-friendly materials.

The materials most commonly used in Axis solutions, replacing PVC, are HDPE (high density polyethylene), PE (polyethylene), and XLPE (cross-linked polyethylene), contributing to a sustainable and safer environment.

8 Creating a smarter, safer world for all

In today's industry, the use of PVC plastics should be seen as a largely obsolete option, rather than a default option. As an innovator, Axis has a duty to stay one step ahead of the market. This ensures that our installers and customers are working with future-proofed solutions, driving competitive advantage, complying with the latest regulations and fulfilling social and environmental responsibilities.

When a company must decide whether or not to use an unsustainable plastic, it should consider the benefits of accessible alternatives. These factors may include: reducing the risks plus onset of health conditions, creating a safer site for employees and firefighters in case of a fire emergency, lowering the risk of structural damage from burning PVC, and of course reducing environmental damage. Firms are demanding high quality products that deliver innovation at both a technological and sustainability level.

With social responsibility at the core of our business, Axis ensures that our commitment to sustainability continues to extend to PVC and beyond.

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About Axis Communications

Axis enables a smarter and safer world by creating solutions for improving security and business performance. As a network technology company and industry leader, Axis offers solutions in video surveillance, access control, intercom, and audio systems. They are enhanced by intelligent analytics applications and supported by high-quality training.

Axis has around 4,000 dedicated employees in over 50 countries and collaborates with technology and system integration partners worldwide to deliver customer solutions. Axis was founded in 1984, and the headquarters are in Lund, Sweden