EUROPEAN ASSOCIATION OF PUMP MANUFACTURERS
ASSOCIATION EUROPÉENNE DES CONSTRUCTEURS DE POMPES
EUROPÄISCHE VEREINIGUNG DER PUMPENHERSTELLER

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PVDF shortage case-study[1]

The deteriorating supply of PVDF for dosing pumps risks producer's ability to help customers maintain public health and food safety and supply

What is the societal impact of a lack of PVDF-based dosing pumps on the market?	• Critical applications are in public drinking water supply, in food production (farms & factories), guaranteeing safe water in buildings, hotels, (public) swimming pools • In addition, pumps are used to run critical utility processes in Power and Pharma industries • Difficulty to disinfect drinking water, worst case leading to interruption of water supply & risk for public health • Halting disinfection of wastewater, leading to environmental impact for rivers and lakes. Increased risk of discharging multi-resistant strains of bacteria into the environment • Shut down of food production plants, putting extra pressure on food availability & prices • Inefficiencies in primary food production. For example, due to more bacterial infections and animal death in meat production if animal feedwater is not disinfected. • Inability to run disinfection equipment for warm water systems in Hospitals, Retirement homes, Hotels and Sports facilities. Substantially increasing the risk of severe pneumonia due to Legionnaires disease, resulting in premature death • Disruption in production of pharmaceuticals and power industries (and many others) due to operational challenges with cooling water systems, cooling towers, water intake, etc. • Closure of public swimming pools disinfection of the pool water cannot be maintained

[1] Case study was not prepared in the context of the PFAS ban proposal. It was prepared during the COVID pandemic in the light of a possible constraint on PVDF supplies.

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Why are PVDF dosing pumps critical?	• Customers choose PVDF dosing pumps for its reliability to dose precise amount of chemicals, even in varying process conditions • Customers select PVDF versions of dosing pumps only for their most demanding and critical applications. About 1 in 4 dosing pumps sold is a PVDF pump • Customers have standardized processes based on these pumps, also to help end-users meet regulatory demands in terms of precision and documentation of the chemicals added

PVDF used in chemical dosing pumps is a critical component to maintain a safe water supply, safe and efficient food production and to protect the public from water born pathogens

PVDF is used to build chemical dosing pumps and sell these to customers globally, largest markets are Europe and US.
Generally, chemical dosing pumps are used to precisely dose fluids ((harsh) chemicals) in many different applications across many different industries.
PVDF dosing pump customers can primarily be found in municipal water supply, buildings and light industries, most often within water treatment applications:

- Municipal water supply & wastewater management
- Food & beverage applications
- Water quality management in large residential buildings, (public) pools, hotels, etc.
- Light industries (pharma, paper, etc)

Selected applications (inclusive, but not limited to these applications):

- Disinfection (chlorination) of drinking water to ensure safe public water supplies
- Chemicals used for drinking water treatment (e.g. pH adjustment, chemical cleaning of water filters, fluoride addition (US))
- Oxidation of organic substances in drinking water and wastewater treatment
- Disinfection of treated wastewater, preventing pathogens entering rivers, lakes and oceans
- Water treatment for reuse (requires more chemicals for treatment & disinfection)
- Preparation of chemical solutions to clean process equipment in food production (dairies, meat industry, breweries and many other)
- Disinfection of surfaces in food and beverage, health care facilities, etc.
- Treatment of food with disinfectants to improve storage duration for fruits, meat, etc.
- Treatment of animal feed water to improve productivity and reduce the use of antibiotics
- Biocide treatment for heating and cooling, to reduce energy consumption
- Disinfection of pool water for public pools, spas, etc.
- Legionella control in larger buildings (hotels), retirement homes, hospitals, sports centers, public water features, cooling towers etc., to prevent outbreaks of Legionnaires' disease
- Biofouling and legionella control in cooling towers for commercial buildings

Why PVDF?

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- Chemicals are usually dosing from high stock solutions with high concentrations
- Typical chemicals are strong acids and bases, strong oxidants, organic acids, ferric chlorides, etc.
- PVDF dosing heads are exposed to hundreds of pressure cycles per day (typical to 8 or 16 bar), material integrity is essential to ensure efficacy in use of the chemical and safety of the plant operator
- All materials need to be globally certified for use in food and beverage, municipal water supply, pharma, etc., which limits ability to readily switch supplier

Example Applications (inclusive, but not limited to these applications):

- **Municipal Water:** Disinfection Systems, Sodium Hypochlorite, pH Adjustment, Fluoride Addition
- **Municipal Wastewater:** Fume Scrubbers, General Odor Control, pH Adjustment, Residual Disinfectant Management, Pharmaceutical Sterilization
- **Food & Beverage:** Clean-In-Place, Clean-Off-Line, Sterilizer Water Treatment
- **Institutional:** Cooling Tower Waste Treatment, Boiler Water Treatment, Closed Loop Systems
- **Other Applications:** in Swimming Pools & Water Parks, Mining & Agriculture, Utilities & Dairy Industry, Pulp & Paper, Oil & Gas operations, Crude processing, Supply of disinfectant in chicken hatchery – dosing pumps inject precise amount of sanitizer droplets, disinfection for water reuse using chlorine dioxide for beverage manufacturers