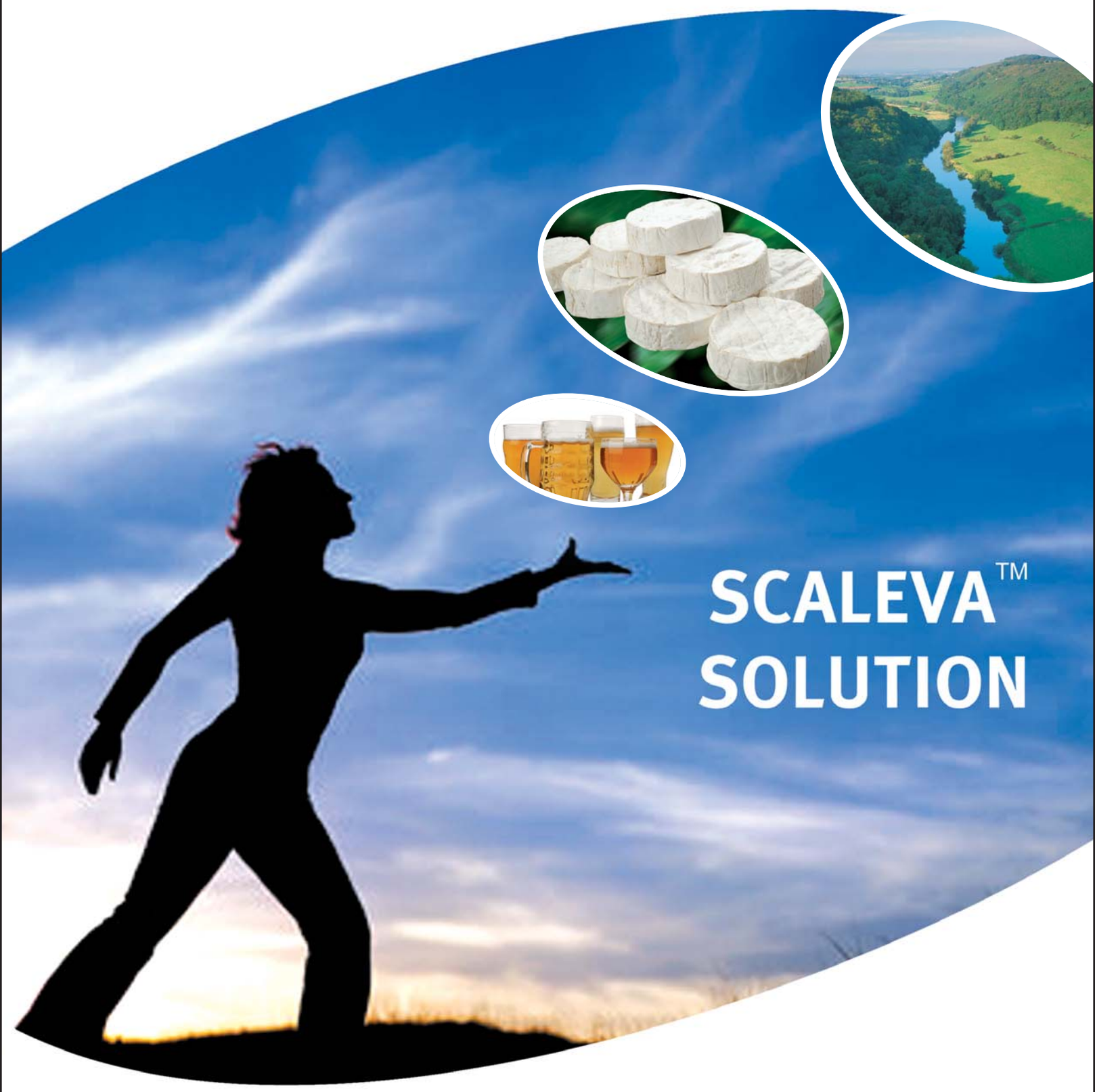
scaleva™

The new-generation cleaning solution for the food industry



SCALEVA™ SOLUTION

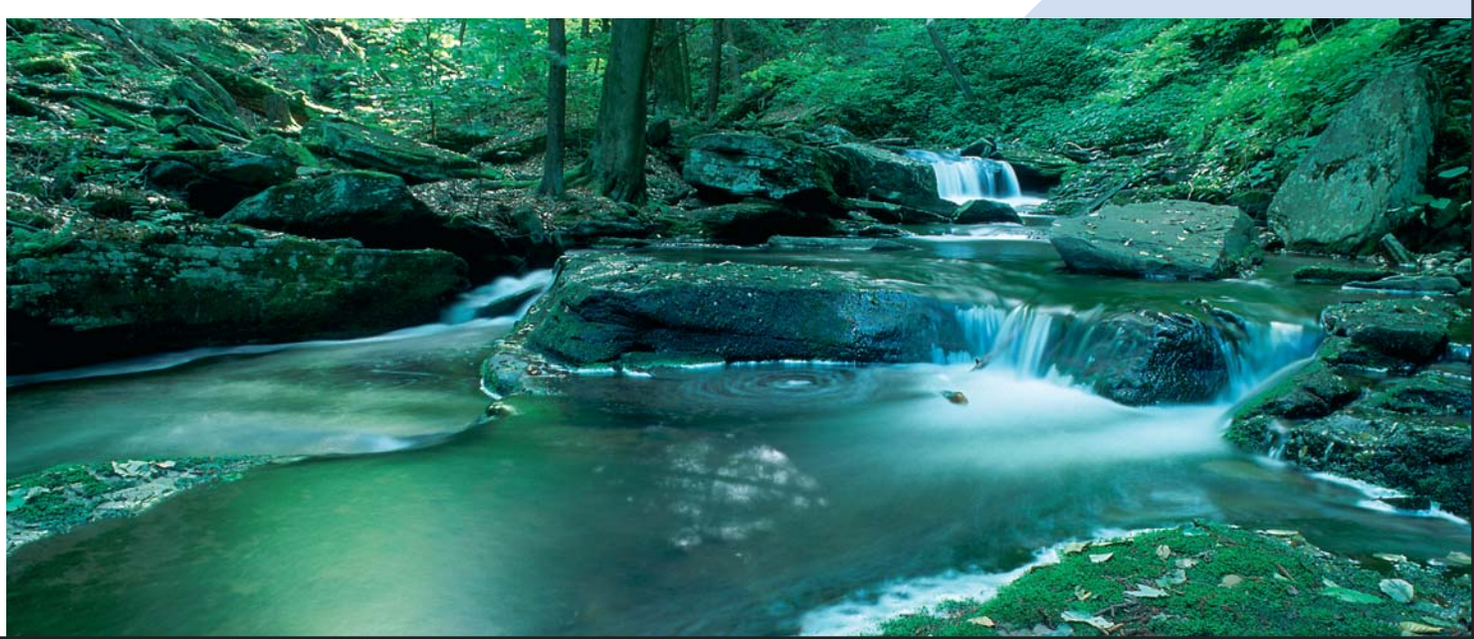
ARKEMA

Preventing water pollution, a high priority for industry

Industry, government, and the public regard water as a unique asset and a heritage to safeguard. An area of great concern is the proliferation of green algae or micro-algae on coastlines and rivers, creating an imbalance in aquatic ecosystems.

A primary cause of this phenomenon, known as eutrophication, is waste from human activities (agricultural, urban and industrial waste). The water becomes burdened with excessive amounts of phosphorous or nitrogen nutrients; resulting in uncontrolled growth of algae, deoxygenation of the water, and die-off of other aquatic species. Manufacturers with waste streams that potentially contribute to the aquatic imbalance of the waterways are sensitive to these concerns and employ all available means to minimize this type of water pollution. However, despite extensive efforts, many cannot achieve their desired results without incurring prohibitive costs. Moreover, environmental regulations on the acceptable levels of potential pollutants released to waterways are becoming progressively more stringent. The phosphorous compounds present in most detergents used in the food industry are at the top of the list of targeted wastes.

With Scaleva™ solution, Arkema offers a new, technically effective and economically viable solution to help industry in protecting the environment.



Scaleva™, a healthier solution for the environment

Produced from an original molecule, **Scaleva™** solution is proving to be the most innovative cleaning alternative for the food industry, providing effectiveness, productivity, dependability, and economy. **Scaleva™** solution contains no phosphorous or nitrogen and contributes very little COD (chemical oxygen demand) to effluent entering a water treatment plant. **Scaleva™** solution is 100 percent biodegradable, as determined by OECD Standard 301A.

Scaleva™, an easier solution to use

available on request from your cleaning solutions supplier

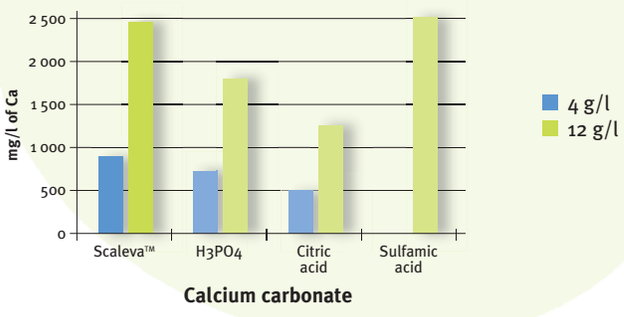
Cleaning formulations using **Scaleva™** solution do not require modifications to your existing facilities. You simply need to request the new **Scaleva™** solution-based formulations from your cleaning solutions supplier.
Scaleva™ solution is particularly effective in cleaning applications, rapidly removing scale without damaging the surfaces of the various materials, including polypropylene used for molds or stainless steels used for vats. Furthermore, **Scaleva™** solution is an odorless, non-foaming liquid solution that is stable up to 200 °C (392 °F.)

Proven by testing

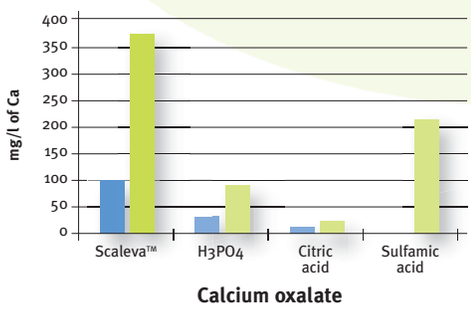
Testing performed by Arkema has shown that Scaleva™ is more effective in removing calcium carbonate and oxalate.

Arkema's Scaleva™ vs. phosphoric, citric, and sulfamic acid

Scaleva™ attacks calcium carbonate and oxalate faster than phosphoric, sulfamic, or citric acids:



Calcium carbonate



Calcium oxalate

Test conditions: A cube of calcium carbonate (1 cm3), or powdered calcium oxalate (6 g) was immersed in 100 g of acid solution (4 or 12 g/l = 0.5 or 1.5 oz/gal) for 24 hours at 70°C (158°F).

Scaleva™, a more prudent solution for your budget

Scaleva™ solution is designed to be a total economic solution and a viable alternative to phosphoric acid, simplifying conformance with standards governing phosphorous waste. A treatment plant using **Scaleva™** solution in place of phosphoric acid can substantially reduce operating costs for treating wastewater. **Scaleva™** solution does not require the precipitating agents now used to remove phosphate, thereby reducing total sludge output and alleviating cost arising from sludge disposal. It also plays an active role in helping industry conform to the constraints imposed by the standards governing phosphorus waste.

Scaleva™ solution and its winning properties

Scaleva™ solution offers a combination of properties making it an ideal acid component in cleaning and descaling formulations:

• Strong acidity	→ Faster action on calcium and iron carbonates and oxides
• High solubility of Scaleva™ salts	→ Better dissolution and removal of salts
• Non-foaming and slightly hydrotropic	→ Readily formulated with various surface active agents
• Stable to strong oxidizing agents	→ Safely and easily formulated with H_2O_2 or peracetic acid
• Non-oxidizing	→ Minimizes degradation of other components of the formulation
• Less corrosive to metals	→ Less damage to pipes and equipment
• Low toxicity and ecotoxicity	→ Easy disposal of dilute acidic or neutralized solutions in treatment plants

The disappearance of phosphorous waste
A European aspiration
has become law

The European Directive 2000/60/EC on Water establishes a framework for a European policy for improving water quality, with a long-term obligation to ensure that surface water and ground water reach a high level of quality within the next 15 years.
European Directive 76/464/EEC addresses the elimination of water pollution caused by a long list of dangerous substances. Phosphorous is included in the list (referred to as “list II, second indent of Directive 76/464”) comprising the substances with respect to which each Member State takes responsibility for implementing the necessary measures to reduce the quantities of these substances in water.

The substitution solution

The food industry is particularly concerned because it uses cleaning solutions based on phosphoric acid that inherently produce phosphorous waste. Depending on the sector, these phosphoric acid formulations contribute between 30 percent and 70 percent of the phosphorous in effluents. An ideal solution would be to reduce these phosphates at the source through using a non-phosphorous cleaner offering less pollution without sacrificing effectiveness.

Phosphoric acid, a financial burden for a usage with no future

The food industry, and more especially the cheese industry, is currently a large consumer of cleaners based on phosphoric acid. The effectiveness of these solutions and their compatibility with a large number of materials, such as the ubiquitous polypropylene, has contributed to their success. Unfortunately, the other side of this coin is an overabundance of phosphorous in aqueous waste, which is difficult to remove in biological treatment plants without substantial investment.
This leads to an ever-growing need to use reagents to remove phosphates, in turn increasing the volumes of sludge and the amount of land needed for sludge spreading. The possibility of greater regulation of phosphorous wastes is ever-present, which will involve significant increases in treatment costs. Perpetuating this current situation exposes manufacturers to greater financial risk and will ultimately prevent them from achieving their environmental objectives and commitments.

A global chemical player, Arkema consists of three coherent and related business segments: Vinyl Products, Industrial Chemicals, and Performance Products. Present in over 40 countries with 17,000 employees, Arkema achieves sales of 5.7 billion euros (on 2006 figures). With its six research centers in France, the United States, and Japan, and internationally recognized brands, Arkema holds leadership positions in its principal markets.

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