

Supply security for critical chemicals needed for water supply and sanitation during COVID-19-crisis

INCOPA is the European inorganic coagulants producers association and it represents 30 companies with more than 80 production sites across Europe. The annual total production of coagulants is 4 million tons and the member companies represents about 85% of the total European production capacity.

INCOPA members produces inorganic coagulants, aluminum and iron salts, which have several applications. The main application is water treatment, it is divided into two main sectors: the utility sector and the industrial water sector. The utility sector itself is split into drinking water treatment and wastewater treatment.

In the water treatment processes inorganic coagulants are used for:

- Drinking water: remove solid impurities which is a basic treatment step to enable a proper and safe disinfection of the drinking water. It is important to note that coagulation is a fundamental step of most drinking water plants in the world.
- Wastewater: there is two main action, as a primary step to reduce heavy metals, nutrients, organic substances and other particles, but also as the main way to remove phosphorus from the wastewater.

In this paper we only address inorganic coagulants (aluminum and iron salts). We do not include organic flocculants, which are mainly used in sludge dewatering applications. In water treatment applications, they can also be used, often in combination with coagulants.

Is there are risk of supply shortages for critical chemicals needed for water treatment and wastewater treatment?

INCOPA members produce two types of coagulant products, aluminum and iron salts, which are based on abundant resources and by-products. About 70% of the raw materials are high quality by-products from other industries. Examples of critical key raw materials are:

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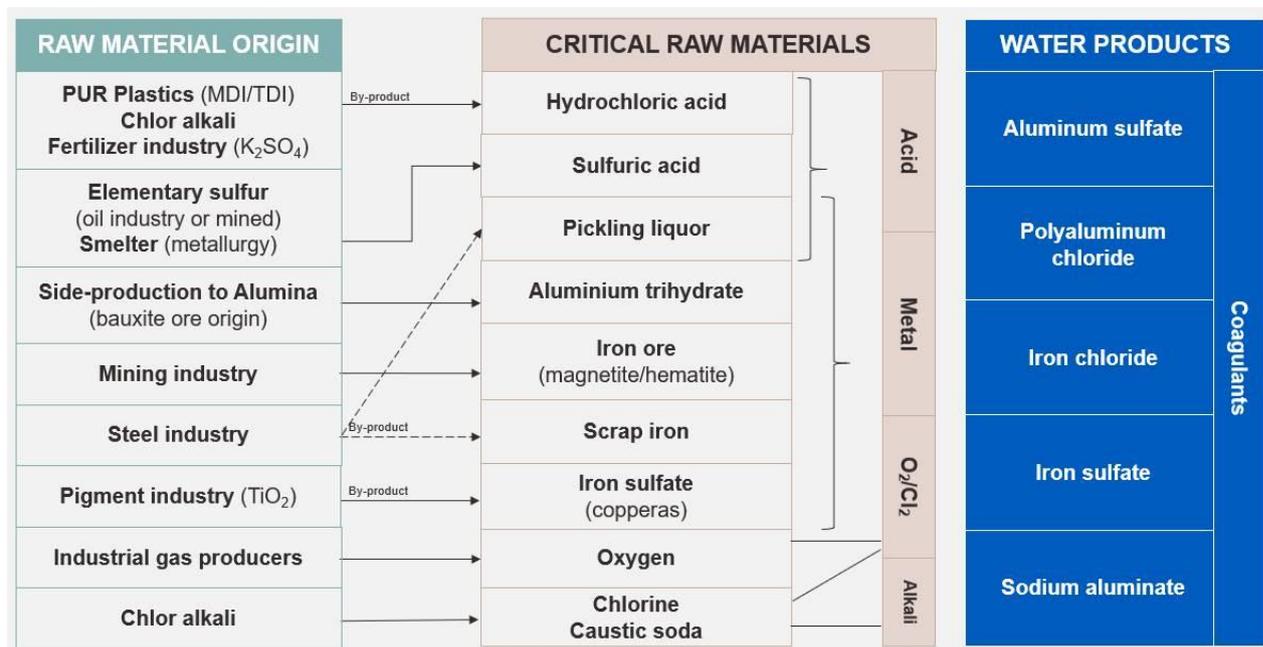
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Thanks to this large range of possible raw material sources and the elevated number of coagulants production sites in Europe, a global shortage is very unlikely.

That said, the risk of supply shortages are the following ones:

- **Raw Materials shortage:** when primary industries e.g. steel production reduces production, this has an impact on coagulants' raw material supply and local shortages can materialize.
- **Supply chain disruptions:** logistic constraints can make the delivery of our raw materials to our sites or the delivery of our products to the waterworks difficult.
- **Employees infection:** our workers at production sites can be infected by the Covid-19 and therefore generate production outages.

Whereas our industry has implemented a long list of measures to protect its employees, the other two first sources of risk are beyond our control. Therefore, it is important that coagulants but also the raw materials to produce them are considered as essential products and have highest priority by national and European authorities. An unlimited transportation permission including across European borders should be enabled to secure a smooth supply to drinking water or wastewater facilities.

Are there enough European suppliers?

Inorganic coagulants are produced in 80 plants across the EU, which is certainly one of the highest density in the sector of Large Volume Chemical substance.

Moreover, it is important to note that the overwhelming majority of coagulants used in Europe are made in Europe. Therefore, we consider the market as well supplied.

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In case of supply shortage, what reserves are available?

Many of the relevant chemicals are liquid products and the storage capacity is limited. The waterworks have optimized stocks and consequently delivery-on-time is a common principle. Nonetheless, as critical infrastructure, they usually keep stocks ensuring a business continuity typically for 1-3 weeks.

While cross-border transportation is an issue due to quarantining, increased border controls and increased demand of drivers, the market for end material producers is sufficiently diverse to offer resilience. However, local supply disruptions are likely with increased frequency, the longer the transport restrictions last.

What measures are needed to ensure continuous supply?

Most of the water treatment chemicals are transported by trucks. To secure a smooth supply to drinking water or wastewater facilities an unlimited transportation permission, even across European borders, is required.

Mitigation measures should primarily aim at an uninterrupted supply with key raw materials transportation to European manufacturing sites of coagulants as well as their raw materials suppliers as well as the subsequent distribution network.

Also the protection of the active labor force is paramount. Numerous precautions and measures have been taken and implemented to minimize the risk of infection. Wherever possible, employees and even entire shifts are separated in order to achieve the greatest possible safety. A prioritized conduction of coronavirus-testing for the manufacturing personnel can be justified.

If there would be a supply failure of inorganic coagulants which consequences would it have for wastewater sanitation and drinking water supply?

In case there would be a supply shortage of inorganic coagulants in the EU, the priority of the producers would be to first serve the drinking water and then wastewater treatment plants. Wastewater treatment failure would have primarily an impact on the environment (increased phosphorus levels and algae growth), whereas drinking water supply failure would have severe impact on the whole society.

Detailed impact of such shortage would be:

Drinking water supply:

- Coagulation removes many of the particles, such as dissolved organic carbon, if these are not removed it will be difficult to disinfect the water.
- Troubled water as colloids, small particles, suspended solids will not be removed.
- Difficulties to reach the EU and national quality standards for drinking water



Wastewater sanitation:

- Cannot reach regulated levels of phosphorous substances like phosphates which will lead to increased algae growth in lakes and water resources.
- Increased heavy metals and other ions in water
- Energy shortage in cases where biological organic degradation (enhance biogas production) is contributing to the local energy supply.
- Wastewater is in many cases discharged to lakes and rivers, the water in this lakes and rivers is later used as source for drinking water hence the drinking water plants could expect more polluted raw water to be treated.

But once again, due to the very large network of coagulants' production sites in Europe, a local shortage is possible, but a global shortage looks very unlikely at this stage.

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