

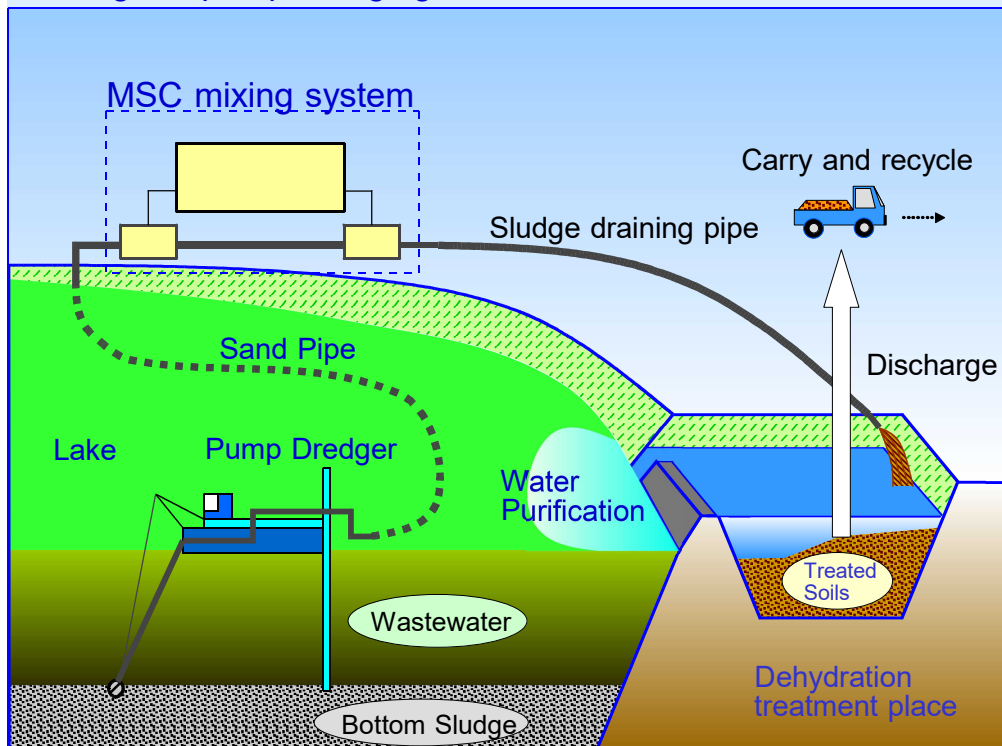


MSC method

Miracle Sludge Clean

Bottom sediment treatment technology with MSC method can quickly and economically improve a large amount of the bottom sediment to good quality soil by its large aggregation capacity and dehydration-separation function. By MSC method, contaminated water environment will improve and bottom sludge will be recycled to rich soil for plant and landfill. Moreover, MSC method can treat waste sludge from wastewater treatment facilities. Thus, MSC largely contributes to water environment improvement.

■ Design of pump dredging boat construction



Due to large flocculent and hydrophobic effect of MSC, it doesn't require large agitation hydration facility. Thus, continuous flocculent and hydrophobic of bottom sludge can be conducted in simple facility.

■ What is MSC method?

MSC stands for "Miracle Sludge Clean." The main contents of MCS are iron salt and metal salt. This inorganic flocculant is composed of rare earth elements. MSC method is the general term of "bottom sediment treatment and water purification technology with MSC."

■ Advantage of MSC method

1. Due to good working property, it can work from small to large amount of treatment.
2. It protects treated water and soils against bad odor, water pollution and the remixing sludge and water.
3. Separated soils can be recycled.
4. It is less likely to produce industrial wastes, as well as it is economical.

■ Safety of MSC method

Since it doesn't contain toxic matters, it is safe and harmless to spill stream, organisms in coagulative separated soil, plant, and environment.



Sludge is mixed by an agitation pump on dredger. High concentration of mud water is sucked by a dredging pump.



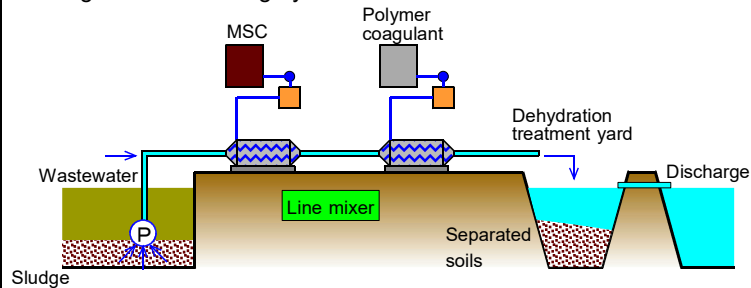
Mud water is sent to a treatment plant through pipes, to correspond to movement of the dredger, we set up pipes with floats on the water and set up laying metallic pipes on the ground.



Muddy water which MSC agitated is released to a treatment yard and separates hydrophobicity immediately. There is no offensive odor during construction according to an odorless function of MSC.

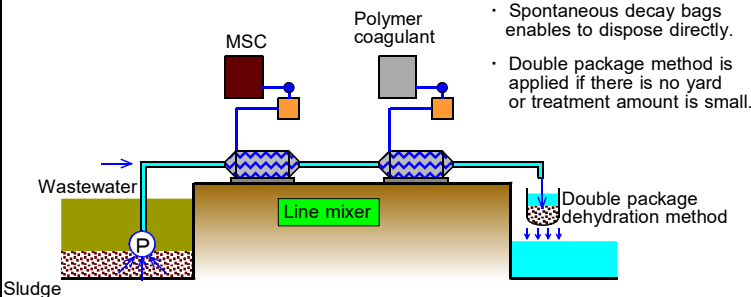
■ MSC mixing system method

● Design of MSC mixing system

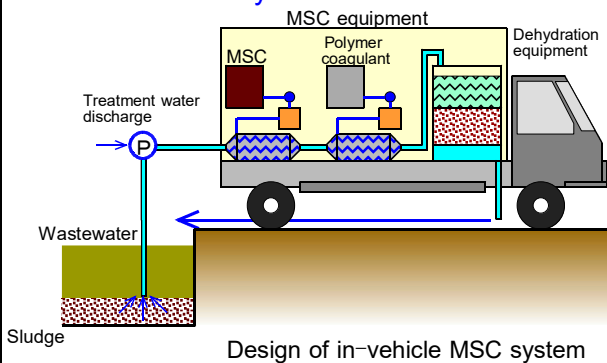


By line mixer arranged in a pipe, each agents are mixed together.

● Design of MSC double package dehydration method

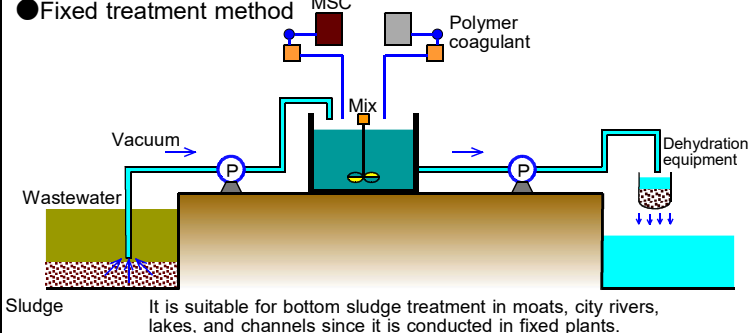


■ In-vehicle MSC system

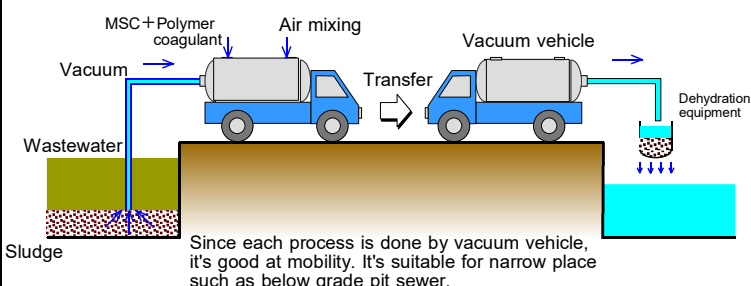


■ MSC method usage example

MSC method enables to conduct suitable treatment method in each site.



● Movable treatment method



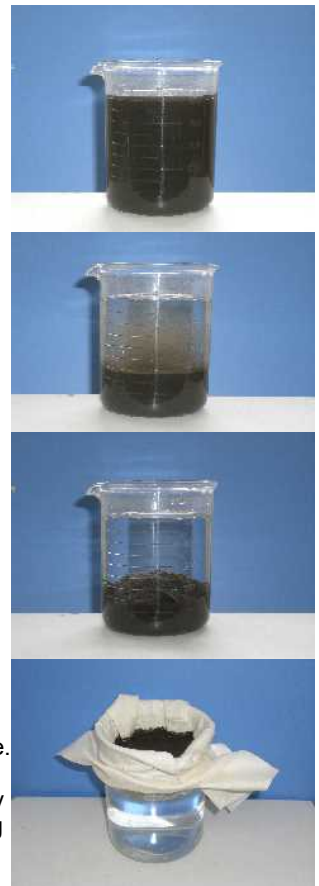
■ MSC Method Principle

① By adding MSC to bottom sludge or polluted water, absorbed water film is destroyed due to hydrophobing. Also, capillary water between soil particles is separated and becomes free water. Separated soil particles adsorb each other, thus become gritty particles.

② In adding Polymer coagulant, the diameter of flock gets bigger, and it settles down very fast.

③ Flocculated soil particles are not mixed with water again. As a result, supernatant water can directly drain. By filtering with permeable mats, the water is easy to be separated.

④ Flocculated soil has large hydraulic conductivity by hydrophobing of soil particles. Thus, it enables to conduct efficient dehydration in bottom sludge. Moreover, because soil particles are absorbed each other without capillary water, the bonding structure is strong and has large consolidation strength. As a result, the soils can be used for banking as recycling.



■ The application of MSC method

MSC's high flocculent ability can treat fine suspended matters and harmful substances that traditional methods could not treat. In treated water and soils, there is no probability of secondary pollution or negative effect on Eco system, thus very safe method. This method can work for wastewater from various industries. By adding existing treatment facility, it can improve the function.

■ Suitable place for MSC

- | | | |
|---------------------------|-----------------------------|-----------------------------------|
| ■ Organic bottom sludge | ■ Food industry wastewater | ■ Polluted water from digging |
| ■ Industrial waste sludge | ■ Brewery wastewater | ■ Polluted water from tunnel |
| ■ Livestock waste sludge | ■ Cement plant wastewater | ■ Polluted water from road cutter |
| ■ Wastewater sludge | ■ Crushed stone wastewater | ■ Concrete wastewater |
| ■ Sewage sludge | ■ Chemical plant wastewater | ■ Bentonite wastewater |

■ Recycle for MSC treated soils

From disposal to effective use.

MSC treated soils is fertile which soils contain rich fertilizer nutrients (phosphorus · nitrogen).

- | | | |
|--------------------|-------------------|-------------------------|
| ● Fruit farm | ● Flowerbed soils | ● Vegetable field soils |
| ● Cultivated field | ● Garden soils | ● Planting soils |

※ In case that is doesn't contain harmful matters such as heavy metals.



■ Manufacture

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