

Storm Sewage Treatment Problems
At "Shiprepairing Centre "Zvyozdochka" OJSC

Chief environmental engineer Ivanov V.A.
01.12.2010

"Shiprepairing Centre "Zvyozdochka" OJSC was founded in 1954 and is located in Severodvinsk, on Yagry island, in strongly branched out Northern Dvina delta where it flows into the White sea.

The enterprise makes repair, modernization and recycling of nuclear submarines, constructs and repairs surface vessels, manufactures propeller screws.

The enterprise territory is equipped with sewerage to collect and discharge rainwater and thawed snow. The sewerage is the place to dump some water after cooling the equipment. Sewage is discharged in a reservoir by 8 sewers of the storm water sewerage. Sewers are dispersed on distance of about 3 km. They are subject to ebb-tide fluctuations 2 times a day. Height of inflow is up to 1.5 m.

Rainwater and thawed snow arrive in the reservoir without treatment. The sewage total annual volume by all sewers comprises about 500.0 thousand m³. Polluting substances content in sewage of all releases periodically exceeds the established specifications that demand sewage treatment. To decrease polluting substances content in sewage a number of actions have been taken:

- re-tap of the most polluted drains in to soil sewerage line with preliminary clearing,
- cleaning of storm water drain wells,
- actions to collect waste oil products in shop floors more thoroughly,
- training the enterprise staff in the field of waste treatment,
- introducing ecological management system in the field of nuclear-powered submarine complex recycling and waste treatment according to the international standard ISO 14001,
- carrying out industrial ecological control of the divisions.

The basic difficulties regarding treatment introduction:

1. It is necessary to build 8 treatment facilities since to unite sewage of any sewers is not possible because sewers are far from each other and the territory has high communications density.
2. Small concentration of polluting substances in sewage. Less pollution concentration, more expenditure on their removal.
3. In the Russian Federation there are very strict requirements for quality of sewage dumped in reservoirs.
4. There is no list of the best accessible technologies to clean storm waters according to water discharge standard requirements.
5. Subsoil water affinity makes construction considerably more expensive.

At the enterprise the project of treatment facilities for one sewer is developed. It is supposed to clean from suspended substances and oil products that will indirectly lower other polluting substances content. Treatment facilities consist of a storage tank with a grit basin, a pump station, gasoline-oil separator and two-compartment assembly for post-treatment with anthracite and activated coal loading.

In connection with financial difficulties treatment facilities construction has not started yet.