WASTEWATER WOOD BIOMASS AND ITS PRACTICAL APPLICATION

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TECHNOLOGICAL SCHEME OF SEPARATION OF THE BIOMASS FROM THE WASTEWATER AND ITS APPLICATION

1. Wastewater of the wood hydrothermal treatment in plywood production
2. Its coagulation-flocculation with composite coagulant
3. Precipitated biomass sludge centrifugation
4. Biomass sludge in a form of a gel
5. Preparation of biomass suspension with different concentrations
6. Spraying the suspension on the soil surface as dust suppressant
Composite coagulant CCPEI - polymer-colloid complex of polyethyleneimine with polyvalent metal ions

- Wider effective pH range (pH 5-8)
- Lower optimal coagulant dose (50 mg/l)
- Better coagulation efficiency (up to 97% biomass removal)
Wastewater of the wood hydrothermal treatment in plywood production

Its coagulation-flocculation with composite coagulant

Precipitated biomass sludge centrifugation

Biomass sludge in a form of a gel

Preparation of biomass suspension with different concentrations

Spraying the suspension on the soil surface as dust suppressant

dust on unpaved road
Soil sample before and after adding precipitated biomass (0.8%)

Fractional composition of soil structured with precipitated biomass

Dependence of soil loss on aggregate size of structured soil
CONCLUSIONS

1. In the study, the new composite coagulant CCPEI was developed. Using the new CCPEI at the optimal coagulation parameters the separation of the wood biomass achieves 97%, but the extraction of lignin and lignin-like substances is more than 65%.

2. The separated wood biomass is able to glue the dusty sand with the formation of sandy aggregates. The obtained results show its potential application as a structuring agent for dust suppression.