Pre-workshop: Promoting the Agricultural Use of Sludge

Towards Maximising Agricultural Use of Sewage Sludge in Japan

Toshiaki Yoshida

Water Supply and Sewerage Planning Division, Water and Disaster Management Bureau, Ministry of Land, Infrastructure, Transport and Tourism, Government of Japan
(E-mail: yoshida-t92e5@mlit.go.jp)

Abstract:

Considering the recent soaring prices for chemical fertilisers raw materials and Japan's heavy reliance on imported ones, in December 2022 the Government of Japan decided the policy framework to strengthen food security, which includes assisting expansion of fertilisers use of manure and sewage sludge, and sets the target to double the use of manure and sewage sludge and increase the ratio of domestic resource fertilisers use (phosphorus-based) to 40% by 2030 (25% in 2021).

In line with this initiative, the Ministry of Agriculture, Forestry and Fisheries (MAFF) and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), the competent ministry of sewerage, convened a public-private joint study committee from October to December 2022 towards expanding fertilisers use of sewage sludge. Through the committee's discussion, the two Ministries decided the direction of approaches, where each stakeholder commits full efforts towards significantly expanding fertilisers use of sewage sludge while the two Ministries, the agricultural sector and the sewerage sector collaborate to ensure safety and quality of sewage sludge fertilisers and promote understanding among consumers, aiming for domestic resource manufacturing and stable supply of fertilisers and a resource circulating society.

In March 2023, MLIT issued an administrative notice to sewerage authorities requesting them to endeavour to manage sewerage while fully aware of the fundamental policy of prioritising and maximising fertilisers use of sewage sludge hereafter and so on. This represents a radical change in approach to sewage sludge treatment, whereas the 2015 amendment to the Sewerage Act stipulates sewerage authorities shall endeavour to use sewage sludge as fuels or fertilisers and in FY 2023 10%, 15%, 53% of generated sewage sludge (2.32 million dry tonnes) was used as fuels, fertilisers, construction materials, respectively.

Towards maximising fertilisers use of sewage sludge, MLIT primarily undertakes the

following measures.

[1] From FY 2024, two programmes of MLIT provide seamless financial assistance to sewerage authorities who will newly or additionally use sewage sludge as fertilisers. One covers heavy metals and fertilisers components analysis, plan formulation, and various activities in a consideration stage. The other covers constructing facilities for fertilisers use of sewage sludge.

[2] From FY 2023, MLIT invites sewerage authorities considering newly or additionally using sewage sludge as fertilisers to apply. For adopted sewerage authorities, MLIT conducts heavy metals analysis in sewage sludge and component analysis of sewage sludge fertilisers and/or facilitates collaboration with local stakeholders to ensure distribution channels for sewage sludge fertilisers, allowing of measures according to local characteristics.

[3] Among technologies for using sewage sludge as fertilisers, selective phosphorus recovery in sludge treatment processes (e.g. crystallisation of magnesium ammonium phosphate) face challenges regarding construction costs and variation in recovered phosphorus. From FY 2023, MLIT publicly solicits technologies enabling efficient and low-cost selective phosphorus recovery and demonstrates the effectiveness of these technologies at full-scale facilities, aiming for their broader adoption.

[4] In March 2024, MLIT published a technical document outlining the steps of sewerage authorities for newly or additionally using sewage sludge as fertilisers. It targets both sewerage authorities' manufacturing fertilisers such as composting or selective phosphorus recovery and outsourcing manufacturing sewage sludge fertilisers outside their treatment plants. It covers a broad scope from selecting fertilisers manufacturing methods/schemes, considering distribution channels, registering fertilisers to an implementation phase.

Also, MAFF undertakes measures such as establishing the official standard ‘Microbial Phosphate Fertiliser’ to guarantee the composition of sludge fertilisers, financially assisting the construction of facilities manufacturing domestic resource fertilisers, conducting demonstration projects to improve and expand sewage sludge compost fertilisers, and promoting collaboration among the stakeholders of domestic resource fertilisers.

Keywords: agriculture, fertiliser, Japan, sewage, sludge