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Ammonium sulphate production from by-products of wet phosphoric acid process- fluosilicic acid and phosphogypsum

At present time many producers of phosphate fertilizers faced the challenge of processing and recycling of fluosilicic acid (FSA). It is a pollutant of a primary concern and cannot be landfilled without being treated. Existing best available techniques for processing FSA involves production of fluoride salts which are limitedly applied. As a result, the acid is neutralized with lime. This method of treatment ultimately increases the amount of solid waste sent for storage. A better environmental alternative of this method is to use technological solutions which can allow to process FSA to produce substances required for chemical industry. NIUIF has developed a new technique of co-processing of phosphogypsum and FSA by-products to produce ammonium sulphate and fluoride containing precipitate. This process is based on neutralization of FSA by ammonia in presence of phosphogypsum. Gypsum, the main component of phosphogypsum, is used for precipitation of F in form of calcium fluoride. After neutralization and precipitation the slurry is separated into solution of ammonium sulphate and mixture of calcium fluoride, gypsum and silica to be used in the cement industry. Water solution of ammonium sulphate with low content of impurities can be used for production of NS, NPS and NPKS fertilizers.



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Biography

Maksim Tcikin is graduated with Honors from the D. Mendeleev University of Chemical Technology of Russia. He is a R&D and Business Development Manager at JSC "The Research Institute for Fertilizers and Insecto-Fungicides" (JSC "NIUIF"), which belongs to PhosAgro Group. He is a Co-author of six patents in the field of phosphate raw materials processing and fertilizer technology.

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