E1-20: Radiotracers to solve industrial and environmental related problems

D G L Wickramanayake[1], Cyril Kasige[2]
[1]Atomic Energy Authority, Colombo 3, [2]Japan Atomic Energy Research Institute, Tokai, Japan)

The transit time method was used for flow rate measurements in main effluent channels at the National Paper Corporation using Iodine-131 and Tecnetium-90. This study details the tests carried out to calculate the fibre losses from the paper machine, determine actual losses of fresh water from entire pulp and paper manufacturing processes and confirm actual volume of effluents diverted to the settling ponds.

The tracer was injected into the channel as a short pulse. The movement of the tracer passage was monitored with 2 radiation detectors mounted in the flow at 2 measurement points at a known length and the transit time of the pulse between the measurement points calculated from recorded signals.

This method was successful and results useful in modification of the present fibre recovery system, reduction in water consumption, waste and modification of effluent treatment plant leading to economical and environmental benefits. In comparison to the other available methods, the method reported is simple and applicable to other industries as well.