

## PVCCLEAN

### Extraction of heavy metal ions from recycled PVC powder

#### Introduction

Reuse of recycled PVC in new products can be restricted by the presence of heavy metals present in the R-PVC. These ions (lead, metal, tin) have had a function as a stabilizer for PVC to prevent breakdown of PVC during processing.

In this project the feasibility of extraction of the heavy metals from R-PVC powder by use of humid vapor will be investigated. Both technical feasibility and economics of the process to be developed will be considered. The R-PVC powder is from recycling of PVC of window frames.

The project is sponsored by SRVKG (Stichting Recycling VKG) and performed in cooperation by KIWA, Polymer Science Parc Zwolle and DPI Value Centre. Students from universities of applied science are involved via PSP.

#### Objectives

In this project the feasibility of extraction of the heavy metals from R-PVC powder by use of humid vapor will be investigated. The objective is to develop a process which is both technical feasible and save and for which the economics are in accordance with the PVC market.

#### Project description

The project has been divided in the following stages:

1. Literature study to state of the art of PVC recycling methods,
2. Development of a reliable analysis method to determine heavy metal concentrations in ground PVC,
3. Extractions tests on a laboratory bench scale ( 1 kg R-PVC),
4. Extraction tests on medium scale (10 kg R-PVC),
5. Process optimization,
6. Report and potential for an installation on industrial scale.

DPI Value Centre will coordinate the project and is the direct contact to SRVKG.

The equipment will be installed and operated at Kiwa Apeldoorn. Moreover, Kiwa will coordinate the extraction process and physical chemical analyses of the products.

PSP will perform measurements on the recycled powder and execute extrusion runs. PSP is also responsible for coordination of the tasks of students participating in the project.