VinylPlus (legacy) additives safety 2019: project descriptions

PROJECT 1 – PVC recyclate legacy substance content

A potential obstacle for recycling PVC is the presence of legacy additives (legitimately used when the products were put on the market, but which are now subject to obligations, ranging from reporting presence to restrictions) in discarded long-life products.

This project is aimed at having a picture of the current concentrations of legacy additives in PVC recyclate. Firstly, through the submission of a questionnaire, respondents are asked to provide information about the content of specific legacy additives (e.g. antimony trioxide (ATO), BPA, Pb) in the recyclate. In a second step, Polymer Comply Europe (PCE) will ask the companies to send samples which will be analysed in order to assess the concentration of such substances. The analytical project itself will be led by Vincent Stone on behalf of VinylPlus. The information from both questionnaires and experimental results will be complemented in order to obtain a complete picture. The testing will be used in order to further refine PRE substance screening methodology for PVC.

WHY? Assessing the concentration of legacy additives in PVC recyclate.
WHO? Recyclers and Converters.
WHAT? Participation in the survey and sample supply.
COST? Testing of delivered samples shall be covered by VinylPlus

PROJECT 2 – Leaching complementary tests

Considering the background of the project previously described, additional information about the migration of specific additives is needed: ATO and BPA. In particular, ATO is under evaluation by Germany (which could lead to EU restrictions), whereas BPA is considered to be restricted by Germany because of its property of endocrine disruptor for environment.

The purpose of this project is to carry out leaching tests for ATO and BPA contained in soft and rigid PVC applications, in order to estimate both diffusion and partition coefficients. The study will be performed on standardised samples (of pre-defined additive concentrations) and, in parallel, on real recyclate samples, which will be used as a benchmark, as it has already been done for Pb and low molecular weight phthalates. The production of the standardised samples will necessarily require the knowledge from experienced converters. This project will involve both recyclers and converters.

WHY? Studying the leaching of ATO and BPA from PVC-based applications.
WHO? Recyclers and Converters.
WHAT? Knowledge transfer for sample preparation and sample supply.
COST? Characterization and modelling shall be covered by VinylPlus

PROJECT 3 – PVC barrier project

For both rigid and soft PVC-based applications some substances that will most probably be under restriction are present in recyclate used to manufacture new products (e.g. Pb, DEHP, DBP, ATO, BPA). This project is aimed at developing a new technology in order to prevent the additive migration from the polymer matrix through the formation of a barrier. The research will be focused mainly on soft PVC, but the results obtained may be useful for new rigid PVC products. This project will involve both recyclers and converters, who will be asked to join a consortium in order to develop applications for which it will be possible to perform a screening of the barrier efficiency of different technologies. This project may eventually be incorporated into Horizon 2020 EU funded projects at a later stage.

WHY? Developing a technology to prevent additive migration from the matrix.
WHO? Recyclers and Converters.
WHAT? Knowledge transfer as an input of the study.
COST? VinylPlus co-funds development with interested companies. Conditions to be defined.

PROJECT 4 – Workplace air monitoring for ATO and TiO_2

The objective of this project is to carry out a measurement campaign involving recyclers, converters and compounders. More specifically, the air monitoring campaign will be focused on the assessment of the exposure to both ATO and TiO_2 in the workplace. Indeed, for regulating ATO two options are available: setting an OEL or a restriction with a reference maximum exposure value. For TiO_2, an OEL could also be proposed. Measurements may be performed referring to a specific laboratory for the analysis in order to reduce the costs. At the same time, a specific method to assess both respirable and nano fractions of dust will be used. The sampling cost will be partially shared with Vinyl Plus. The results of the exposure measurement campaign will be a useful support to develop an OEL for both ATO and TiO_2.
WHY? Assessing the exposure to ATO and TiO_2 in the workplace.
WHO? Recyclers, Converters and Compounders.
WHAT? Knowledge transfer as an input of the study.
COST? VinylPlus covers up to 50% of sampling and analysis cost

PROJECT 5 – Practical safety instruction development

Following the formal signature of the agreement on 24th February 2017 between VinylPlus and the European Chemical SSDC made of ECEG (European Chemical Employers Group) and industriALL (European Trade Union) under the umbrella of the EU Commission Decision 98/500/EC promoting the dialogue between the social partners in the sectors at European level, the signatories developed a concept note identifying priority actions in the areas of health & safety, education/training, knowledge transfer and sector evolution.

Therefore, the aim of this project is to develop a set of practical safety instructions for workers, providing best practice guides, manuals and harmonized trainings for workers. A single company (recycler or converter) or a group of companies from a specific country is needed as a candidate. This project will be in collaboration with the national Trade Union.

WHY? Developing a set of practical safety instructions for workers

WHO? A single company or more companies from one country: Recyclers/Converters.

WHAT? Knowledge transfer as an input of the instruction development.

COST? External cost to be financed by VinyPlus. Full cooperation of company HSE department and support of management expected.