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When tags interfere with recycling

Massive use of Radio-Frequency Identification poses new challenges in separation of waste

Some consumers have already taken notice of them: ever more packaging with adhesive tags or unusual labelling. It is a system using so-called Radio-Frequency identification, or RFID tags, which will eventually replace the barcode commonly used today. Their advantage is that they store more information on minimal space and are quickly read by readers. RFID tags are well-placed everywhere where goods are registered, monitored or transported automatically. The new tags allow automatic store checkout, simplify warehousing, and can even prevent theft. If the current trend continues, the recycling industry will face enormous challenges in the coming years, as demonstrated by a study done on behalf of the Federal Environment Agency (UBA). After melting waste glass, for instance, it could become less shatterproof or discoloured if the recycled glass contains trace amounts of aluminium and silicon from RFID tags. In any event, RFID tags must become more ecological. Tags that are metal-free, more easily removable, or affixed to bottle labels instead of the glass would be better.

There are currently only about 86 million tags in use in Germany, which are disposed of largely with residual waste, and 20 million of which are on packaging. The use of these RFID tags does not yet pose any significant challenge to the recycling system in place. However, according to a scenario worked out on behalf of UBA, a considerable increase to over 23 billion tags by 2020 is expected. This would mean a sharp rise in inputs of copper, aluminium and silver into the recycling processes, from about 7 tonnes (2007) to 770 tonnes. Furthermore, there would be an increase in silicon input. These volumes will be reached well before 2020, after which time there will be additional applications for tags, e.g. tighter tracking of pharmaceutical drugs. In any event, without preventative measures the input of extraneous materials will have reached critical volumes by the middle of the next decade. Should the recycling industry not be able to remove these tags from packaging for separate storage, this would add up to a loss for the economy of some 40 million euros in metals alone. Copper impurities affect glass recycling as well as the reprocessing of tinplate and aluminium. The copper content of incineration slags could increase unnecessarily and decimate recovery quality.

UBA recommends close observation of the development in tag types and volume. More active dialogue between RFID tag manufacturers, trade, and the recycling industry is called for. Should the current trend continue, joint efforts by the business to find ecological solutions are called for. These solutions mainly concern ecological tag design, that is, a modification to their

composition and the possible development of metal-free polymer microchips. Furthermore, the tags must become more easily removable, aided by the development of appropriate adhesives or by affixing tags on bottle labels instead of on the glass.

A complete and abridged version of the *Impact of RFID tags on waste management* study can be downloaded for free here: <http://www.umweltbundesamt.de/uba-info-medien/dateien/3845.htm>.

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