

Successful Electronic Communication in Waste Management

Waste in the Fast Lane?

By Ute Müller and Eckhard Flor

No, waste transporters aren't just staying in the left lane these days. The new Closed Substance Cycle Waste Management Act (KrWG) passed on February 2, 2012 doesn't speed the trucks up, but rather puts data processing in waste management into the fast lane. Two years ago on April 1, 2010, the so-called electronic waste records procedure became mandatory. Since then, millions of documents have been electronically signed and sent back and forth across Germany. Since that is working so well, the update to the law made it possible for numerous other electronic documents and procedures to go forward, but in a unified system.

eANV and ZKS-Abfall

But the beginning wasn't so easy. The process of records management for hazardous waste is anything but simple. For every waste stream classified as hazardous – that is, waste of a particular waste type from a producer to a disposal company – a waste disposal record must be requested electronically in advance. Of course, there are different variants of the procedure, but at least three parties are always

involved: The producer or collector, the disposal company, and the supervisory authority. All of these work on the same document in a predefined order, must each sign it one after the other, and must transmit the document to the next party in the chain. And that's just the preliminary check – no waste has been transported yet!

Electronic documents are communicated between the involved parties through ZKS-Abfall. About

40,000 companies are involved in the Electronic Record Procedure (eANV); each of them must register with this official IT system to receive access to an electronic mailbox (OSCI). The participant uses this encrypted mailbox to handle electronic communication in the eANV using the software of their choice. The transmission of documents to the proper official authorities is also done using ZKS-Abfall. All the agencies in Germany use a single service mailbox. Mes-

Technical terms

ZKS-Abfall: Central Waste Coordination Office: Central software installation of the German federal states for the administration and forwarding of electronic documents.

BMU interface: XML schemes for the electronic documents of the eANV from

BMU (Federal Ministry for the Environment).

ASYS: Waste monitoring system: software used in all German federal states (German Länder) for the monitoring of disposal of hazardous wastes.

eANV: Electronic Waste Records Procedure; is based on the Ordinance on Waste Recovery

and Disposal Records (Nachweisverordnung - NachwV) and obligates producers, transporters, disposal companies, as well as authorities to electronic handling of records documents using qualified electronic signatures.

Modawi: Middleware for the eANV from Consist ITU

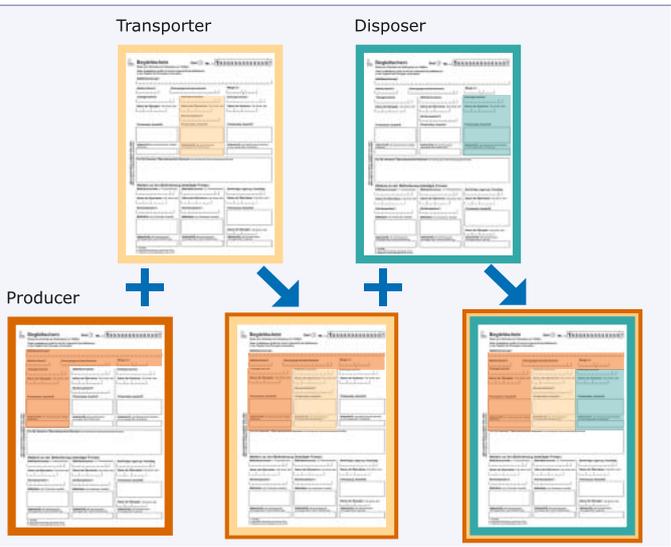


Fig. 1: eANV consignment note – every participant creates a new layer and fills it with their own data.

sages received there are analyzed by ZKS-Abfall and automatically sent to the respective federal state.

Every transport counts

For each transport of hazardous waste – about 2.5 to 3 million per year across Germany – a consignment note must be recorded. This must identify the waste, the associated record, the quantity, and three to six parties involved in the transport. The parties must edit and sign the document in the order required by law. The producer, as source of the waste, is the first. Then at least one transport company is involved in the transport. Finally, the disposal company is the destination of the waste transport. The disposal company sends the completed document to the responsible authority for checking. The disposal company also sends the completed document to all participants, since they are subject not only to a documentation requirement but also a

register requirement, and must retain the electronic documents in order for at least three years and show them to officials upon request – but that’s another story.

For both these records and the consignment notes, an XML interface definition was published in 2007 (the BMU interface) that permits the recording of information about all participants and their electronic signatures, ensuring compliance with the signature order.

Layers and views

The electronic documents in the interface consist of layers, as shown in the illustration. Each participant creates a new layer for a document, fills their content into the layer, and places the layer onto the existing layers of the document (Fig. 1). All document content that the participant has not filled with content in their own layer is considered valid without changes – each layer is transparent to content from earlier layers. The interface also explicitly specifies that only changes should be entered in a layer. Then the participant signs not only their own layer, but the document as a whole – that is, also the information already entered and signed by previous participants. Corrections and additions to the data of other participants – if desired – are always

made to the participant’s own layer and not to other layers, since this may destroy their signatures.

Each layer has a view that contains all content from the current layer and all layers below it (Fig. 2). If content was corrected – i.e. overwritten – then only the latest information applies in the layer.

Each document thus carries its entire life in the individual layers. Each intermediate stage (view) is signed by each company or authority. Corrections and additions are thus detectable and binding without the need of keeping multiple versions of a document available. The electronic document thus accompanies the process and is content and accompanying document at the same time.

The combination of the layer principle on the one hand and

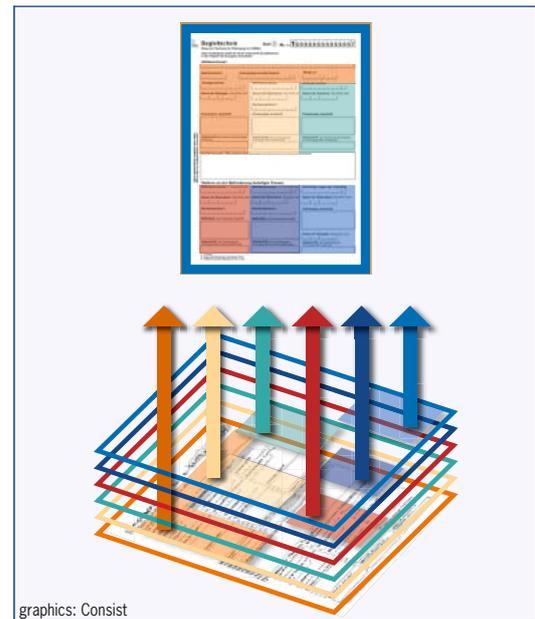
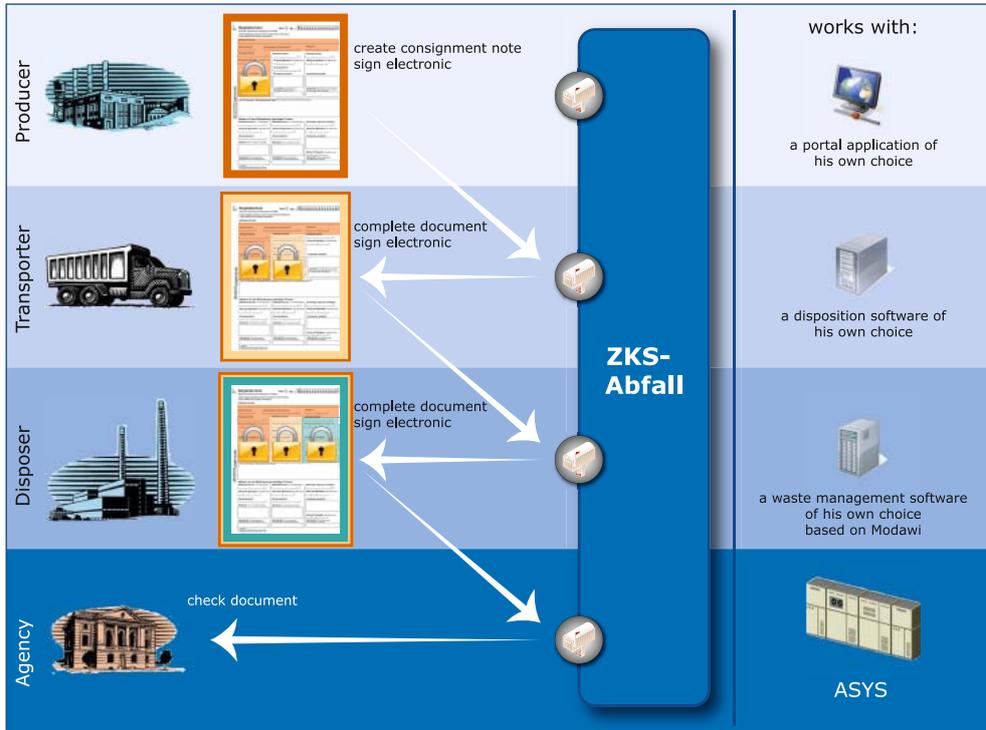


Fig. 2: Each layer has a view of all contents and layers.



ZKS-Abfall is the virtual mailbox for the processing and forwarding of a consignment note, with the qualified electronic signature of the participants.

ZKS-Abfall as a virtual mailbox on the other permits the electronic modeling of the paper consignment note, with its five copies and many participants.

The new Closed Substance Cycle Waste Management Act (KrWG)

In Section 64 KrWG, the use of electronic formats has been globally reversed: Wherever written form is required, electronic formats may also be used. The exclusive use of paper must be explicitly specified. The financial and practical advantages of electronic records are clearly superior, according to the preamble of the law. The powers to order statutory instruments in Sections 10, 11, 16, 52, and 53 KrWG

thus also include the power to approve or require electronic procedures. "The ultimate goal is that in the future as many legal waste management monitoring and approval procedures as possible will be handled electronically in a harmonized system." (Quote from the preamble to the law, German Bundestag, publication 17/6052, page 149). Consequently, a decision of the Bundestag was immediately brought about under the title of "Avoiding unnecessary bureaucracy" which reads as follows: "The Federal Government is required in this context to use and take full advantage of the significantly expanded options for the use of modern communications technology, relying on the electronic records procedure already introduced in waste

management disposal records and using its possibilities consistently." (German Bundestag, publication 17/7505, page 15)

And what do the drivers in the slow lane do?

After just two years, the electronic records procedure and its comprehensive process of layered XML documents, qualified electronic signatures, and a central mailbox have thus become a fixed component of waste management. 40,000 companies and their employees enjoy the benefits of the electronic records procedure and the new law will significantly increase that number. Waste management thus provides companies with a mature procedure and technical infrastructure that permits electronic communications at the highest level. This infrastructure simply has to be exploited, especially outside waste management

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