

Keeping APCr Out Of Landfill

Tetronics International was unhappy to be informed recently that Defra ministers had taken the decision not to remove the derogation that allows Air Pollution Control residues to be disposed of to landfill at three times the standard waste acceptance criteria (3xWAC) threshold for hazardous landfill. Chief technical officer, **David Deegan**, explains why

The waste management industry has gone through some significant changes over the years and ultimately it has shaken off its unsophisticated image to become more of an innovation pioneer. To make that change, the waste industry needed considerable investment in capital infrastructure, new technology adoptions and new business operations scientifically anchored around waste management protocols, all implemented through operational licensing regimes; as policed by the Environment Agency.

These demands had seen the demise of many rogue operators. Waste, for some period now, has been considered as a resource and valorisation opportunity; which fits in with the sustainability and circular economy agendas of modern industry.

Probably the most significant physical change within the UK has been the adoption of thermal waste management using energy recovery facilities (ERFs). This is now a well-managed and mature technology platform that has been established to divert waste away from landfill disposal and for valorising the material and energy content of the waste. Modern ERF technology is now typically only applied to residual waste, ie, municipal waste following the removal of recyclates, and is part of integrated waste management infrastructure that spans the entire waste hierarchy. It is reported (2015 EA statistics) in England and Wales that 10.4m tonnes of residual waste were incinerated in the year.

ERF facilities include significant investment in abatement technology for meeting air emissions quality standard. Without being overly complex, this equipment includes filtration media for particulates, neutralising agent dosing for acid gases, chemical reagent dosing for species like NO_x and physical sorbent addition for the adsorption of volatile species, like mercury and persistent organics.

A consequence of using these techniques is a concentrated secondary hazardous waste called Air Pollution Control

residue (APCr). APCr is a fine voluminous highly alkaline grey powder, loaded with pollutants, which is becoming more concentrated with time, owing to the good stewardship of the UK Environment Agency. This makes the disposal of APCr a complicated and potentially hazardous process to implement, which demands attention to detail.

Based on this positive backdrop, and after investing so heavily in these processes to protect the environment from airborne emissions, it would be ridiculous for Defra to under-manage the APCr issues. However, on 7 February 2017, Tetronics International were unfortunately informed that Defra Ministers had taken the decision not to remove the derogation that allows APCrs to be disposed in landfill at three times the standard waste acceptance criteria (3xWAC) threshold for hazardous landfill.

The announcement cited a "lack of alternative disposal solutions" as the primary reason for not enacting the change and phasing out the derogation over a



transitional period, which is believed to be the original recommendation resulting from the extensive consultation process conducted between the Industrial Stakeholder Forum and Defra itself. The proposed change also aligned with Defra's published hazardous waste strategy and was almost unanimously accepted, as reflected in the Environmental Services Association (ESA) press statement.

New Infrastructure?

THE TRANSITIONAL period was meant to allow for new waste management infrastructure to be developed, with the scheduled change providing the confidence for the industry to invest. During extensive consultation activities, Defra led Tetronics International and the wider industry to believe that the revised hazardous waste WAC criteria would be brought in. However, after six years and post-Brexit vote, Defra seems to have taken a u-turn and wasted this golden opportunity to secure integrated environmental protection.

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This all occurs after the UK Government (via BEIS) invested £1m of taxpayer's money in R&D grant work – match funded by Tetronics – to demonstrate the suitability of Plasma Vitrification (the results of which are pictured opposite) to solve the problem and eliminate the need for this hazardous waste stream to be sent to landfill.

Instead, UK waste management companies will continue doing what they currently do, which is not to adopt new environmentally beneficial technology, such as plasma-based-recovery, and continue to unnecessarily send this hazardous material to landfill as a dormant liability for future generations; and/or dilute it into building products that are present within the wider uncontrolled environment.

Without the derogation and aligning with current European legislation, the amount of APCr sent to landfill will continue to rise. Already, 282,000 tonnes of APCr per year is being generated in England and Wales – enough to fill over 100-plus Olympic-sized swimming pools per year.

So why did this happen? Well this is a matter of opinion, but contributing factors must have been:

Negative Policy Impacts – the reality of APCr treatment in the UK is not that APCr waste goes for hazardous landfill disposal, but the material goes into waste treatment facilities and then comes out as a waste-form with non-hazardous coding for disposal in a less controlled environment, ie, incidental dilution. Therefore, removal of the 3x WAC derogation would have never been the entire answer and would have probably pushed more material down the non-hazardous landfill route, ie, less control. Defra therefore knows that unacceptable practises do occur and was concerned that the 3x WAC removal, in not having the desired impacts, would lead to its strategy and regulatory control being criticised.

Waste to Product Grey Areas – APCr is currently recovered by processes beyond plasma, some of which produce shaped building products. Tetronics doesn't think the efficacy of plasma is ever questioned. However, the alternative technology or service providers that manufacture products are self-regulated as the process falls between waste and product statute.

As a shaped product under Registration, Evaluation, Authorisation and restriction of Chemicals (REACH) the "article" is examined with a very light brush. This equates to a hole in regulation and lack of control. In this respect Defra is probably not comfortable with the role of the "end of waste" panel that may be exposed to criticism due to the associated liabilities.

Timing – with fiscal pressures, such as health care, pension and austerity in the community, as well as Brexit uncertainties, there is every likelihood that arguments were not well formatted when delivered to ministers. This would be very disappointing after such an extensive period of consultation and policy development.

Consultation limitations – a wider consultation was held on the issue, however, responses in this more public of forums are often guarded and take in the opinion of wider stakeholders, ie, not just the waste management industry, by the actual council-based fee payers. It could be conceivable that APCr disposal WAC derogation removal could be seen as a risk with potential to increase costs. However, fiscal consideration would have had minimal impacts if presented correctly and the bill for APCr management, as opposed to residue waste collection and management, is miniscule as it equates to circa three percent of the ERF input and is protected by contract. **Indecision** – maybe the consultation process was inconclusive and Brexit has superimposed turmoil? Defra therefore may have not want to be seen as delaying again. Alternatively, there may be a bigger picture, with the perception that the hazardous waste strategy was stale and that a more holistic refresh of regulation was required; maybe based around the circular economy and the best environmental outcome, as embraced elsewhere in Europe.

Tetronics International will continue to champion its vision of a cleaner future, but it is difficult to see how this will now occur within the UK's regulatory environment. We will continue to work with our business partners and those who require a solution to this problem.

We will help raise awareness that the hazardous APCr waste does not need to be sent to landfill and can be recovered as a resource, as opposed to being buried as a liability. We will work with progressive countries willing to adopt the best available environmental technology, such as ours, to solve this problem and as a basis for delivery of that best environmental outcome. ■



As chief technical officer David has responsibility for the technical and compliance delivery of Tetronics' capital equipment at its operating clients' sites. He is a Fellow of the Chartered Institute of Materials, Mining and Metallurgy and has a thorough understanding of the regulatory framework of the environmental sectors, from plant permitting, waste/material transfer to compliance monitoring of installations and residues.