

Fireworks and Plastics

In recent years the firework industry Worldwide has been investigating how plastics may be removed from fireworks.

Environmental interest in the potential issues arising from plastic firework debris ending up in water courses and eventually the sea has meant that there is renewed interest in this subject – for obvious and laudable reasons of course.

However, it is important that we both consider the scale of the problem, and to look at what realistically can be achieved to minimise plastic use in the short, medium and long term.

Firework construction

Although the use of plastics as substantial components (such as the outer casing of a shell or rocket) has been reduced significantly in recent years – it has not been eliminated completely. There has been a change in the UK market mostly driven by imports from the Far East which has led, in the most general terms, to a significant reduction in the use of plastics in this form in the professional market (because most shells are paper cased), but a lesser decline in the consumer market.

Plastic remains an important constituent of the small sub components of some fireworks (for instance some whistle units, bombettes and delays) where at present there is no viable alternative to their use.

Scale of the problem

The actual amount of plastics used from any one display is quite small – we estimate that less than 1% of the gross weight of the fireworks in a display comprises plastic (the remainder is card, clay and, of course, the firework stars and lift and burst charges). In addition, it is really only those displays fired from barges or close to the sea where plastic deposition in the seas can occur. Overall therefore we estimate that of the approximately 2600 kg of plastic may enter the sea from all the professional displays fired in the UK annually, only about 10% (260kg) realistically does. This should be compared to an estimated 89 tonnes of plastic straws that end up in the UK seas every year. Plastic straws are estimated to be about 4% of the total plastics that enter the sea – so overall firework debris represents about 0.01% of the plastics that potentially pollute the UK seas per annum.

Future developments

As noted above, considerable research has been carried out to look at non-plastic alternatives and progress is being made, particularly in respect on the larger components such as shell hemispheres. Most are now card based although there is also research on the use of moulded corn starch and other “natural” and biodegradable materials. However, the replacement of plastics in all sub components will take time and we estimate at least 10 years for the basic development to be completed and adopted. We do not project a complete elimination of plastics for, perhaps, 20 years – but this is a sensible goal and one which industry is actively working towards and which aligns with other initiatives to reduce and eliminate plastic pollution in the seas by 2042.

Conclusions

The industry is aware of its environmental responsibilities and, as in other areas, is working towards realistic goals that do not compromise the safety and integrity of the fireworks – which are, after all, explosive devices – for users, spectators, structures and the environment alike.

For more information contact the BPA - www.pyro.org.uk