

LET US SPRAY

CHRIS BISHOP

looks at safer spraying on golfing areas

Over the last five years the type and range of conventional spraying equipment available to greenkeepers has transformed the operator's life. Long gone are the days when application of chemicals could be done by any old sprayer and operator. The Food and Environmental Protection Act (FEPA) has ensured that areas of concern have been highlighted to those people going through the relevant training courses to hopefully make our environment a safer place to work and live.

In this article I shall be briefly dealing with the safe storage of chemicals on golf courses but primarily on the revolution that has recently transformed the older "basic" type sprayers into the types of modern equipment on offer today - with no reference to Controlled Droplet Applicators (CDA equipment).

As a result of the recent legislation, many golf courses have needed to upgrade their storage facilities and possibly reduce their stocks of toxic materials. Along with this the required levels of stock control and application records are needed to ensure the operations comply with the "Good Code of Practice" and are readily available for inspection should they be required.

Permanent buildings are not necessarily required and provided the storage is well ventilated, safe and secure, fire and frost proof and able to contain chemical leakage - a purpose built portable cabinet or store may be an alternative. It is also worthwhile pointing out here that the siting of the store often needs careful consideration to ensure other inflammable materials such as fertilisers, fuels and oil are not located in adjacent areas.

Several manufacturers provide purpose built cabinets for safe lockable storage for up to 200 litres/kg of material which could well be all that is needed - why not let the suppliers keep the larger quantities on their shelves until they are needed? Purpose built cabinets are also available for larger quantities and can range in size from 440-1300 litres. These purpose built stores have the advantage of instant use and can be dropped off on site.

All chemical stores should have clear access not only for delivery vehicles and your sprayers but also for fire tenders should they ever need to be called. The location would also need to be closely sited to a water filling area which ideally needs to have a catchment tank to retain spillage should it occur.

Storage of empty containers must also be provided in a separate



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AD REF 56

An example of the popular 'de-mount' system here fitted to a three wheel truckster - showing hose filling securing alarm



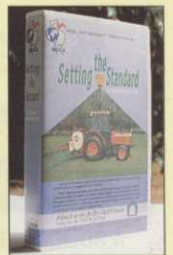
lockable area ideally adjacent to the chemical store to hold waste packaging prior to correct disposal.

The inside of a chemical store needs to be well lit to provide good visibility for reading labels, etc. Bear in mind here that if windows are used they should ideally be positioned on the north side to prevent sunlight fading the labels.

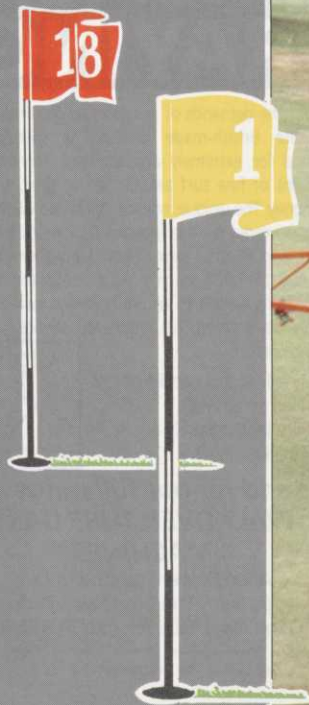
Should vandalism be a problem, it would necessitate the windows being barred or covered in mesh secured on the inside to prevent easy removal and also allowing opening of the window when required. Security lighting or alarms can also be linked up to nearby premises if required but, with any luck, the lack of advertising signs may simply deter the casual theft. The only recommended external signs now used are "No Smoking" and the triangular black and yellow

caution exclamation mark. Fire extinguishers of the correct type need to be readily accessible but current recommendations regarding this are that if a fire cannot be put out easily without risk to the person concerned, simply shut the doors and ring the fire brigade - how far is your telephone from the store and is it clearly marked and accessible?

Design of personal protective equipment (clothing) and the materials now available needs to be covered separately by another article but the correct storage and cleaning also needs to be considered. The PPE operators are required to use needs to be stored nearby the actual store but NOT inside it. This area must also be well ventilated and have adequate hanging space - a separate area from where the operator leaves his personal clothing. Within this same loca-



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The triplet snap-fit interchangeable nozzle body fitted with diaphragm valves

tion, washing and cleaning facilities must be provided with hot water and soap being the bare minimum. A first aid kit of the relevant size and type must also be provided and its location clearly marked from outside the building.

All of these measures help to provide the operator with a safe place of work but we need to examine how the engineers have produced safer equipment to provide more accurate and efficient chemical application.

If we start with the knapsack sprayer range, the designs of tanks have been changed considerably and because the tanks are now virtually all plastic and are formed by blow moulding, intricate shapes have been used to make them more comfortable to wear. Weight has also been considered and the big companies offer 15 or 20 litre options. To reduce operator contamination, the internals of most tanks will now house the hand operated pumps plus the adjustable reset pressure relief valves. However, these are often still difficult to adjust when the sprayer is full and they only control *maximum* pressures – not ensuring *even* pressure and therefore even application.

Overcoming this problem is the recently introduced "Spray Management Valve" which can be positioned between the nozzle and the on/off trigger control on the hand lance. This unit acts as a one way valve which will only open when the set pressure is achieved in the spray line. Once open, any excess pressure is managed down to the set pressure – the valve closing if pressure drops below it. Three colour coded units are available, designed to control pressure to one, two or three bar and the unit is also non-drip.

With the addition of a boom kit fitted with 4 nozzles, knapsacks can be used to apply material to wider areas. However, these larger areas may necessitate more water which, rather than carrying, may well be better covered using a barrow type sprayer – a diaphragm pump being powered by single or three phase electrical motor or a 3 hp petrol engine.

Once this size of boom is reached, greens could well be covered using a lightweight 4m boom on a pedestrian controlled 2-wheeled trolley with a trailing hose – several manufacturers currently offer examples of this size, powered by units at one side of the green to save compaction.

The next stage on would probably lead the way to ATV mounted equipment – either electrically driven roller vane pumps from the bike's 12 volt battery or possibly a trailed unit operated by its own 5 hp donkey engine, driving a diaphragm pump, mounted on a purpose built chassis with break-back booms of widths up to 4 m. These provide relatively cheap units which have accurate forward speed indicators and good manoeuvrability whilst giving minimal compaction – typical tank capacities up to 120 litres. These units will also make better use of an ATV which many golf courses operate for other purposes.

The next slightly larger range of units would now extend into the "de-mount" type units which many golf courses may currently be using. Designed to be quickly and easily attached/detached to the flat bed of 3 or 4

wheeled turf truckster power units, these have been substantially modernised in the last two years to bring them fully up to date with the current legislation. A typical unit uses the trucksters p.t.o. to drive either roller vane or, more commonly now, diaphragm pumps which supply hydraulic agitation to a 300 litre tank and 2 or 3 sectioned 6 or 8m boom fitted with break-back systems.

Many of our local golf clubs combine the use of a "de-mount" for greens and tees with the use of either compact tractor mounted or trailed units for use on fairways and all three of these types of unit could well have special option type builds – the more progressive manufacturers being only too willing to tailor-make units for specialist requirements. Examples of these "options" range from the size of tank, i.e. from 100 litre – 3,500 litre (trailed of course!), to the type of nozzle selected i.e. a single or triplet, snap fit nozzle body, fitted with diaphragm non-drip valves, easy filter rinse and colour coded tips!

Automatic systems are now available to ensure a constant application rate is maintained even when tractor speeds vary on gradients and of course ideal when on older power units with no speedometer or perhaps the hydrostatic drive compact tractor with no "cruise control" override device!

Constant pressure to any of the two or three supplied booms can be maintained with the addition of balance valves to ensure even application when only operating one or two boom sections at any one time and self cleaning main line filters are available to save on operator contamination.

Spray guns and hose reels can easily be added onto the boom outlet supplies for drenching or spot treatments. Colour dyes are sometimes added to the spray material being applied to ensure accurate bout matching but even here foam blobbing kits can be added to a sprayer as an alternative.

When examining the range of tractor

mounted sprayers available, the range of pump outputs needs examining but probably the most advantageous changes have taken place in the layout of controls and additional equipment – these being adjustable to ensure they are close to the operator for easy access or you have the additional option of having them remotely controlled allowing the rear window of cabs to be closed. Tank sizes are one of the most important considerations, as although many smaller compact tractors may well have limiting hydraulic lifting capacities, weight transferred to the rear wheels on large capacity tanks can be a problem with compaction, even with the more modern "flat topped" grassland tyres. It is also important here to mention that correct front end weighting needs checking if the tractor has four wheel drive.

Boom design has now been perfected to provide lightweight easy to handle sectional units all fitted with some kind of break-back device with the option of boom suspension systems on the larger units. Boom widths vary between 12 – 24m and hydraulic folding can also be fitted on many of the larger units – all will be fitted with easy boom height adjustment systems.

The largest trailed units fitted with floatation tyres are available but will not often be owned by many golf courses. However, there are some purpose built self propelled machines available if you have the money. These high output units will be fitted with all the latest flow meters and automatic monitoring systems which can actually now provide computer print outs showing application rates applied to certain areas – ideally suited to a spray contracting professional – perhaps we shall see more use of contractors being employed for large scale operations!

Obviously the range of options is very extensive. It is pleasing to see that the progressive manufacturers will tailor-make a spraying unit to your specific requirements. The trouble is that this will obviously all be available "at a price" but you must also be aware that "bolt on" additional equipment may be all that is required to bring your spraying units up to current legislation requirements. As a result the manufacturers offer the following components which are readily available and relatively easy to fit:

- Low level suction type filler units. (Many of these will be self cleaning and can also be used for empty container flushing.)
- Protective clothing lockers.
- Storage cages for chemical containers.
- Separate clean water rinsing kits.
- Triplet diaphragm type anti-drip nozzles.
- Calibration kits.

From a personal point of view, I welcome the advances that the manufacturers have provided us with. We all have a duty to ensure that our sprayers do get regular maintenance, updating and replacement – the same as any other piece of greenkeeping equipment – and although new machines can be extremely expensive, the trend to safer and more efficient sprayer operation can only aid our advancement towards a safer environment for us all to work in and enjoy.

● Chris Bishop is Machinery Section Team Leader at Oaklands College, Hertfordshire.