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Transportation and storage of chemicals for swimming pools

In the latest article in the SPATA series of technical briefings for swimming pool managers Howard Gosling considers the regulations and guidance relating to all aspects of pool-related chemicals.

This title is really a little bit of a misnomer because 'chemicals' is an all-embracing term. It should be remembered that water is a chemical (H₂O). Indeed water is the universal solvent since, given time, everything will dissolve in water but we do not normally regard water as a particularly harmful chemical, although it is possible to drown in just a few inches of it. Sea water has also been the cause of many deaths.

There is an excellent Health and Safety Executive (HSE) publication entitled Read the Label – How to Find Out if Chemicals are Dangerous, which can either be purchased from the HSE (ISBN number 978 0 7176 6414 6) or downloaded from www.hse.gov.uk/pubns/indg352.pdf. There is also the comprehensive HSE publication Chemical Warehousing – The Storage of Packaged Dangerous Substances, which is now in its fourth edition and was published in 2009 (ISBN number 978 0 7176 6237 1, HSG reference HSG 71). Like all HSG publications, it is available as a download from www.hse.gov.uk; otherwise if you want to buy the book, it is £9.50.

On pages 16 and 17 it gives an excellent chart for what can be kept together, what needs to be segregated and what needs to be kept apart for all the different classes of chemicals. However, certain parts of the book are now out of date because it refers to the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2007, which are now out of date. However, the principles remain the same. This publication also covers CHIP 2002 (as Amended), together with information on the European Regulations on Classification, Labelling and Packaging (CLP), where the United Nations system to identify Hazardous Chemicals and inform users of those hazards, through standard symbols and phrasing on the packaging and labels, and through Material Safety Data Sheets, is part of a whole globally harmonised system of classification and labelling of chemicals (GHS). The deadline for substances classification was 1 December 2010 and for mixtures will be 1 June 2015. This means that we are getting bigger, more comprehensive and, inevitably, longer Material Safety Data Sheets. However, all Material Safety Data Sheets have a Section 14, a section that tells you whether a product is classified as dangerous for transport, in which case it has a UN number. Anything with a UN number is classified as dangerous for transport and there are different rules currently for transport by road, rail, sea and air, but gradually these are being harmonised. The first thing that anybody should do when looking at a chemical is to obtain a copy of the appropriate Material Safety Data Sheet and that will tell you whether it is a product that is considered dangerous for transport.

The HSG 71 Health and Safety Executive Storage of Chemicals publication is aimed at anyone who has responsibility for the storage of dangerous substances, regardless of the size of the storage facility. It sets out control measures aimed at eliminating or reducing risks to people – at work or otherwise – from the storage of packaged dangerous goods. It reflects good practice for the design of new storage facilities and, where reasonably practicable, to existing sites. It also applies to transit and distribution warehouses, open-air storage compounds and facilities associated with a chemical production site for an end user.

For people wanting to store large quantities of chemicals, the Control of Major Accident Hazard Regulations 1999 as Amended (COMAH) is a set of regulations designed to prevent major accidents involving dangerous substances and to limit the consequences to people and the environment of any that do occur. Any COMAH site has to comply with more strict regulations

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where dangerous substances are stored above certain quantities. These regulations apply to establishments rather than individual activities and again the COMAH regulations are jointly enforced by the HSE and the Environment Agencies acting as the competent authorities.

The Dangerous Substances (Notification and Marking of Sites) Regulations 1990 apply to some sites containing quantities of 25 tonnes or more of dangerous substances. These require suitable signs to be erected at access points and at any location specified by an inspector and notification to the appropriate fire and enforcing authorities of any dangerous substances. There is some additional guidance HSR 29.

There are specific regulations to protect the safety of workers and others who may be at risk from dangerous substances that can cause fire, explosion and any other energy releasing agents (DSEAR).

A number of hazards may be created when storing packaged dangerous substances. Staff need to be appropriately trained. There are hazards, as already mentioned, which are identified from the Material Safety Data Sheet and in addition to Section 14, which gives you the UN number, Section 15 of the MSDS summarises all relevant hazardous information about a product in terms of the CHIP labelling requirements.

Most dangerous substances arriving on site will be marked with carriage labelling or marking system laid out in the carriage regulations. These regulations refer to the system set out within the ADR Regulatory regime. ADR actually means: Accord European relative au transport international des marchandises dangereuses par route.

There is a requirement for assessing the risks from dangerous substances and a number of factors that should be considered, such as the hazardous properties of the dangerous substance, the safety information provided by the supplier, the circumstances of the work with the product, particular activities which may present a higher level of risk, the effect of any measure already in place as a result of DSEAR, the likely presence of explosive atmospheres, the likelihood that ignition sources including electrical discharge may occur or anything else that may be relevant. You then need a hierarchy of control to minimise or eliminate the risks.

It should be noted there are particular requirements for hazardous waste.

Consideration should also be given to emergency arrangements and the chemical warehousing book from the HSE gives additional guidance.

The Fire Brigade carry a dangerous goods Emergency Action Code (EAC) list and the latest edition is 2011.

When it comes to transport of chemicals, it should be remembered that the Royal Mail is not a carrier of dangerous goods.

There is a driver training requirement for people involved in the transport of dangerous goods and these, as already stated, are anything with a UN number. These drivers hold an ADR licence for various classes.

The British Carriage of Dangerous Goods Regulations and their Amendments all refer to ADR and the ADR rules are updated every two years, the latest being issued effective from 1 January 2011, when they came into effect voluntarily. They became compulsory from 30 June but there are extended transitional periods applying to a number of specific provisions being introduced. This is a normal event.

With effect from January 2011 there are new criteria for environmentally hazardous substances and you may have noticed, in particular, petrol tankers driving around with an extra-large plaque with a dead fish and dead tree (see ADR 5.2.1.8.3). It is a mark not a label.

There are new Limited Quantity provisions (ADR 3.4) which have come into effect (eg LQ codes disappear) but again it is voluntary until it becomes compulsory in a couple of years time but one does have the option of taking the new code which can be advantageous for some products such as the new larger LQ products: Limited Quantity pack sizes such as for Calcium Hypochlorite and Tricho-Isocyanuric Acid, have moved from 500g to 1 kilo. The labelling of these has also changed.

There are always some items which somebody has thought of, such as orientation arrows which must now be displayed on Limited Quantity packages and over packs containing those LQ packages. Consignors of LQ packages are also required to inform the carrier of the total gross mass of the goods.

Curiously enough, even for the United Kingdom Tunnel Codes, which should have been implemented since 1 January 2010, there are virtually no Tunnel Codes applicable to swimming pool chemicals that will cause any restrictions.

It is now a legal requirement (Chapter 1.3) that training shall be effected before an employee takes responsibility involving the carriage of dangerous goods. This training needs to be supplemented with refresher training; training records have to be kept and made available where required by a competent authority.

Instructions in Writing, according to ADR, can be found at the following website: www.unce.org.fileadmin/DAM/trans/danger/publi/adr/Instructions/english

It should be noted that a person involved in the carriage of dangerous goods should take all reasonable steps to ensure that unauthorised access to these goods is prevented.

Certain chemicals such as dry acid are not regulated for road transport irrespective of the quantity on the vehicle.

We have already mentioned the Limited Quantity, which refers to the pack size, and then there are other exemptions for goods in Transport Category Three, eg Sodium Hypochlorite which may be carried up to 1000kg/litres on their own without needing an ADR trained driver, or alternatively you can carry 330 kilos of Transport Category Two items, which includes products such as Calcium Hypochlorite. When there are mixed loads special rules apply. Anything above these minimum amounts does need a properly trained ADR driver and orange plates, etc to comply with the regulations.

There are times when it is difficult to understand or read the rules and indeed there is conflicting information; one example of that is SP 135 Special Provision for UN 2465 (DICHLORO-ISOCYANURIC ACID, DRY or DICHLORISOCYANURIC ACID SALTS) which currently states, "The dehydrated sodium salt of dichloroisocyanuric acid is not subject to these Model Regulations." A meeting to discuss the continuation of this 'get out' is being held in early December 2011. Watch this space!

This article is authored by Howard Gosling from Pool & Spa Advice. Howard is a member of the SPATA technical committee and is also technical adviser to the British and Irish Spa and Hot Tub Association, as well as being a dangerous goods safety adviser, authorised by the Department for Transport.

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