Appendix 2

Specific hazards for children

This appendix outlines, briefly, those hazards that children could encounter when using vacuum cleaners, oral hygiene appliances (particularly electric toothbrushes) and electric blankets and pads. For many hazards the protection provided for adults will provide sufficient protection for children.

Attached is a matrix that summarises these hazards.

Chemical hazards

Children particularly up to the age of 24 months spend a considerable amount of time both mouthing and chewing. It is important that the level of the heavy metals used in the paints, varnishes etc. which may have a harmful effect if ingested by a child are at a very low level. The levels and test methods for these heavy metals are specified in Safety of toys, EN 71-3.

However, it is very unlikely that a child would mouth or chew any of the products being considered in this research project for sufficient time for there to be a risk of toxicological damage from the paint, plastics or any finishing of these products.

Mechanical hazards

There is a wide range of mechanical hazards from which a child requires protection. Reference can be made to TR 13387:2004 Child use and care articles – Safety guidelines for additional details concerning these hazards.

The most relevant mechanical hazards are listed below:

<u>Entrapment hazards</u>

Entrapment hazards occur when the entire child or part of the child's body becomes trapped in a static gap. These hazards should not be confused with hazards associated from moving parts (see following paragraph).

Of the products under consideration there are no obvious hazards associated with entrapment.

<u>Hazards from moving parts</u>

These are serious hazards as parts of a child's body or flesh could be crushed or severed if trapped within parts that move, particularly scissor. Gaps in products should not allow a child access to moving parts.

Of the products under consideration only vacuum cleaners are likely to present hazards from moving parts.

Entanglement hazards

If children become entangled with products there is a risk of strangulation. The most obvious risk is with the mains supply cord to the products.

For vacuum cleaners it is not possible to limit the length of the supply so that it is sufficiently short not to pass around a child's neck. This risk is greatest when the mains supply cord is not plugged into the mains supply. This hazard must therefore be addressed by adult supervision.

It is presumed that the supply cord for oral hygiene appliances would be fairly short and should not present a hazard. In the case of electric toothbrushes which will be used separate from the docking base any hazard would be extremely low.

For electric blankets there is a risk that a sleeping child who will be in an unattended situation could get the supply cord or any tie tapes wound around its neck.

Choking and ingestion hazards

Choking is a serious hazard which occurs when a child's internal airways are blocked, its breathing is impeded so that air cannot pass into the lungs and brain damage can occur.

Ingestion hazards result from small components passing into the child's stomach which may cause toxic contamination or internal blockage.

Any components that are sufficiently small to cause a choking or ingestion hazard should be firmly attached to products. Any components that are designed to be detachable should be sufficiently large so that they will not pass into a child's airways or stomach.

Requirements and test methods to limit the size of components that could either be pulled off by the child or are designed to be detachable are given in EN 71-1 and additional details for the test methods can be found in TR 13387.

Vacuum cleaners and electric blankets could present a hazard.

For oral hygiene appliances both adults and children would be at risk of choking if parts became detached during use. Particular attention should be paid to the security of tufts on toothbrushes.

Suffocation

If a child's external airways, nose and mouth, are covered by an impermeable layer, air cannot get to the lungs and brain damage can occur.

This hazard is mostly associated with plastic packaging. All plastic packaging used for these products should carry a warning that it should either be destroyed or kept out of the reach of children.

Wounding from hazardous edges and projections

Sharp edges cause cuts, lacerations or abrasions to a child's skin and projecting parts could puncture a child's skin or eye. However, if this hazard is addressed for adults children should not be at additional risk.

Structural integrity

Any structural failure of these products could cause injury to either adults or children.

Upright vacuum cleaners could present a hazard to crawling children if they toppled over on to the child. Their stability should be assessed to try to ensure that this is unlikely to happen.

As indicated previously, for oral hygiene appliances it is important that no parts become detached whilst being used. However, this is a hazard for both adults and children alike.

Inadvertent operation

Young children may need protection from products that are only safely operated by adults or older children. Such protection can be provided by locks and locking devices that are difficult for children to operate or by automatic settings that will give safe operation.

Any locks and locking devices used must consider the age and potential ability of the children that they are designed to protect. For example, young children find it difficult to operate a device which requires two consecutive actions, the first of which is maintained while the second is carried out.

For the products under consideration inadvertent operation is most likely to cause a hazard if a vacuum cleaner is dropped and the on/off control activated. However, this is a hazard for both adults and children alike.

If a child turns a vacuum cleaner on there should be no immediate hazards (see hazards from moving parts)

Thermal hazards

Burns constitute a serious hazard to children. Burns may occur as a result of flammable materials, hot or cold surfaces or hot liquids (scalds). A child's skin is thinner than that

of an adult and the reflex reaction time of younger children is slower than that of adults and allowable temperatures of surfaces should take this into consideration.

If flammable materials are incorporated into a product it is necessary to reduce the rate of spread of flame as low as is reasonably possible so that a child can be removed if any of the materials used in the manufacture of the product should ignite.

Hyperthermia (overheating of a child's core temperature) and hypothermia (lowering of a child's core temperature) are hazards from which a child needs protection.

Of the products under consideration, an electric blanket is the only one that is likely to be a thermal hazard to young children.

Overheating has been associated with Sudden Infant Death Syndrome which is most prevalent in children under 12 months of age. The use of electric blankets should therefore be restricted to children from one year old upwards, the user instructions should therefore clearly indicate this.

The temperature of electric blankets should be controlled so as not to present hazards to children over 1 year of age.

Noise

The sensitivity of children to loud noise is basically unknown. There are scientists who hold the opinion that since the auditory canal in children is smaller than in adults, there is a difference in amplification which makes children more sensitive to high frequency sounds.

Noise reduction is in the interest of both adults and children.

Of the products under consideration, only vacuum cleaners are likely to cause a hazard.

Electrocution

Children have an insatiable desire to investigate anything in the environment in which they find themselves. Young children spend time poking their small fingers into gaps and crevices. All the standards under consideration should include the use of a child's finger probe to assess access to live parts.

Product information

Generally children will be less likely to read instructions than adults and they may use the products completely unsupervised. They will therefore need to be adequately instructed and trained in the use of these products preferably before they will use them unsupervised. Children should be made aware of any hazardous situations that can occur

when using products and where appropriate be given advice on how to deal with such situations.

The instructions for oral hygiene products and vacuum cleaners should indicate that children should not be allowed to use these products before they have been given the relevant training to enable them to use the products safely.

For electric blankets children will be using them in an unattended situation and in this case the safety of the product must be relied upon to provide adequate safety. As indicated previously the instructions should carry a clear warning that electric blankets are unsuitable for use by children under 12 months of age.

HAZARD	Vacuum cleaners	Oral hygiene appliances	Electric blankets and pads
Chemical:			
Mechanical:			
Entrapment			
Moving parts	Finger access to moving parts. Foot access		
Entanglement	Carer supervision required		Mains supply cord and tie tapes
Choking and ingestion	Detachable small parts	Small parts, tufts on toothbrushes	Detachable small parts
Suffocation	Packaging warning	Packaging warning	Packaging warning
Wounding	As adults	As adults	As adults
Structural integrity	As adults	As adults	As adults
Inadvertent operation	As adults		
Thermal:			
Hyperthermia			Use by children under 12 months of age. For older children as adults
Flammability/burning			
Hot/cold surfaces and liquids			
Contact with flames, melting materials			
Noise:			
Maximum noise level	As adults	As adults	
Electrocution:	Access of child's finger	Access of child's finger	Access of child's finger
Product information:	No reference to use by children	No reference to use by children	No reference to restricting use to children over 12 months of age.