

The Treatment of Human Remains: Technical Paper for Archaeologists



Institute of
Archaeologists of
Ireland

**Compiled by
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**Human Osteoarchaeology Subcommittee of IAPA
Technical paper on the treatment of
human skeletal remains from archaeological sites**

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(Northern Archaeological Consultancy Ltd), Eamonn Kelly (National Museum of Ireland), Richard Warner and Sinead McCartan, (Ulster Museum), Derek Simpson (The Queen's University of Belfast), Peter Woodman (Department of Archaeology, University College Cork) and Linda Lynch.

INTRODUCTION

The expansion in construction and development in recent years has led to a huge increase in the recovery of human skeletal remains from archaeological contexts. The potential for the retrieval of information from a skeleton starts to decrease as soon as excavation begins. However, careful treatment of excavated bone before it reaches the laboratory can help maximise the information that can be obtained. Although there have been several attempts in recent years by various specialists to provide guidelines for the profession (some of which have been published in IAPA newsletters) it was felt necessary at this time to provide a clear and concise summary of recommended practice in booklet form. It is hoped that this booklet will help all archaeologists, either in the excavation of cemetery sites where the recovery of human remains was anticipated in advance, or in the treatment of unexpected finds of human bone which can turn up at virtually any archaeological site. The principles described here apply to both urban and rural contexts and to whatever quantity of bone is recovered.

The legal situation governing the discovery, retrieval and curation of human remains differs between Northern Ireland and the Republic of Ireland. Both situations are dealt with here and it is our hope that this booklet may contribute to a harmonisation of practices in the two jurisdictions.

The need for a booklet such as this was first identified at meetings of the Human and Animal Remains Discussion Group (HARDG), organised by Dr. M. Delaney. That initiative led to the formation of the Human Osteoarchaeology Subcommittee of the Irish Association of Professional Archaeologists, IAPA. This booklet is the work of the subcommittee. The format follows that taken by the Irish Professional and Conservators' and Restorers' Association in their *Conservation Guidelines for Archaeologists* booklet (©IPCRA, 1998). We would like to thank them for their inspiration and advice and we hope that this booklet in turn will inspire other specialists to issue their own guidelines.

Each section provides guidelines on procedures and materials, with emphasis on collaboration at every stage between the archaeologist and the osteoarchaeologist.

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1. PREPARING FOR EXCAVATION

Northern Ireland: If human remains are discovered accidentally the RUC should be contacted immediately. If the remains appear to have been buried for longer than 50 years then the Environment and Heritage Service DOE should be informed. If it is anticipated that human remains will be encountered during an archaeological excavation it is the director's responsibility to ensure that the requirements of the relevant lawful authority are complied with before the excavation commences. The landowner of the site, and hence the status of the land, should be identified. If the burial ground belongs to a district council, compliance with Regulation 12 of the Burial Grounds Regulations (Northern Ireland) 1992, subject to Section II (4) of the Coroner's Act (Northern Ireland) 1959, is required. If the burial ground is a Church of Ireland property then it may be necessary to obtain a faculty from the church authorities. All archaeological excavations are undertaken under the authority of a licence to excavate through the Historic Monuments and Archaeological Objects (Northern Ireland) Order 1995. An application for a licence to excavate should be made to the Environment and Heritage Service DOE at least fifteen working days prior to the commencement of any fieldwork, except in the case of an emergency.

Republic of Ireland: In the case of accidental discovery of human remains, it is a legal obligation (Coroner's Act 1962; National Monument Acts 1930- 1994) to notify the Garda Síochána and the National Museum of Ireland. If the remains are in an archaeological monument, the National Museum and the National Monuments Section of the Department of the Environment, Heritage and Local Government should be informed. Once it is established that the bones are not recent they are considered to be archaeological artefacts. The National Monuments (Amendment) Act 1994, Section 14, explicitly states that the legal definition of an archaeological object includes *ancient human remains*. As a result, decisions regarding the ultimate disposition of the remains rest solely with the National Museum. In the interim, the site director has responsibility for their excavation, post excavation care and analysis. An application for a license to excavate should be made to the National Monuments Section, Department of the Environment, Heritage and Local Government. Planning and consultation with an osteoarchaeologist should commence at the earliest stage possible.

1.1 *Think before your dig*

Human remains should not be disturbed unless it is absolutely necessary.

If the environment impact assessment or initial test-trenching suggests that burials are present, inform the developer:

that the exact number of burials on a large site may be impossible to assess beforehand and that excavation time and costs may increase considerably;

that it is his/her responsibility to pay for post-excavation analysis and that the cost of this can be considerable;

that there may be local objections on ethical grounds or adverse publicity.

It may be possible for the developer to adjust his/her plans to minimise skeletal disturbance. Ideally, if large cemeteries are identified while a project is still at the planning stage, development of these areas should be avoided.

1.2 Consultation

Consultation with an osteoarchaeologist at an early stage will help to:

anticipate problems that may arise during excavation;

plan the skeletal recording sheet;

check that plans and photographic records are of a type required;

budget for post-excavation analysis;

determine the quantity and quality of packaging material that will be required and source this material so that it is immediately available when the human remains are lifted.

Excavation directors should not enter into private undertakings with landowners, developers or local communities regarding the fate of human remains recovered from a site. Under the terms of excavation licences issued in the Republic of Ireland, the excavation director is the custodian of the remains but their disposal is not at his or her discretion. The remains constitute archaeological artefacts and final decisions regarding their disposal or curation rest with the National Museum of Ireland.

In Northern Ireland archaeological human remains are not specifically regarded as archaeological artefacts. The decision on the resting place of all excavated artefacts, including skeletal remains, is the right of the landowner. All negotiations on this matter should have been completed by the excavator before excavation and should involve the Ulster Museum if it is likely to be the final repository and the Environment and Heritage Service DOE.

1.3 The excavation

Prior to beginning the excavation it is important to:

ensure that adequate funding has been procured to cover excavation costs and those of the post-excavation analyses that will be required;

study the contents of this booklet and inform staff of the relevant sections on excavation and handling of human remains. This booklet should be made available to all staff throughout the excavation.

When human remains are found during excavations, people are often concerned about the potential health risk involved. It is important to inform all those involved in the excavation that normal safety procedures are adequate for the excavation of dry human skeletal remains (such as washing hands before meals and maintenance of tetanus booster injections).

2. ON-SITE CARE

If the excavation director anticipates the presence of human skeletons on a site, arrangements should be made to ensure that an osteoarchaeologist is present on site for the duration of the excavation. If this is not possible, the osteoarchaeologist should be consulted regularly.

2.1 Excavation

In the absence of the osteoarchaeologist, the adoption of the following procedures should ensure maximum preservation and retrieval of any human skeletal material encountered during excavation.

Upon the discovery of a grave-cut the excavators should avoid walking within the cut, since this can subject material to destructive compression forces and can also cause the collapse of voids which may be present in coffin burials.

The area of the thorax and the abdomen, especially the pelvis, should be excavated with particular care. Delicate foetal bones may be present in the pelvic region. The remains of calcified tissue are also occasionally found in the area of the thorax.

The skeleton must be left in situ until all of the bones are exposed. Trowels should never be stuck into the ground to pry out a bone as this can damage underlying bones.

Partially excavated bones must never be forced from the ground.

Once a skeleton has been completely exposed it should be lifted in a single operation.

If the skeleton is protruding from a section and it is not possible to completely excavate the remains then as much as possible of the skeleton should be retrieved.

To minimise damage to a skeleton it should be completely excavated, recorded and removed in a single day. If there is no alternative to leaving a partially excavated or recorded skeleton *in situ* overnight it should be carefully covered with polythene.

2.2 Recording of the Skeleton

A skeletal recording sheet should be completed for each individual skeleton encountered. Standardised forms that are suitable for recording primary inhumations are available as Appendix 2 to this document or can be obtained on request from the Secretary of IAI.

A labelled plan of each individual skeleton at a scale of 1:20cm should be undertaken. Occasionally, the on-site osteoarchaeologist may request a plan of an unusual burial at a scale of 1:10cm.

Photographs (black and white prints, coloured slides) of the overall view of each skeleton should be taken, with the context number, north point and scale clearly visible.

Detailed close-up coloured prints should also be taken in cases where unusual features are noted (e.g. if the skeleton is in an unusual position, if a foetus is present in the abdominal area or if unusual palaeopathological lesions are apparent).

2.3 Lifting the Skeleton

The remains of each skeleton should be lifted carefully and sealed in plastic find bags. Self-sealing polythene bags with write-on panels should be used. These are available in different sizes and a list of the suppliers in the Republic of Ireland and in Northern Ireland can be found at the end of this booklet. Each bag should be labelled in indelible ink with the site name, year of excavation, context number and the skeleton parts contained in the bag as per the list below. The parts of the skeleton should be bagged separately according to the following system (see Appendix 1 for a labelled diagram of the parts of the skeleton listed here):

- Cranium

- Mandible and loose teeth
- Scapulae and sternum
- Left/right thorax (ribs, clavicle)
- Left/right arm (humerus, ulna, radius)
- Left/right wrist and hand (carpals, metacarpals, phalanges)
- Vertebrae
- Pelvic bones (innominates and sacrum)
- Left/right leg (femur, tibia, fibula)
- Left/right ankle and foot (tarsals, metatarsals, phalanges)

When recovering the bones of the hands and the feet ensure that a substantial amount of soil from the immediate vicinity is also added to the bag. This can be sieved at a later date to ensure maximum recovery of the tiny bones in these parts of the body.

A soil sample should be taken from the area of the pelvic canal, directly over the sacrum.

Never lift a cranium by putting your fingers into the eye sockets since the bones in this area are particularly delicate.

If a skeleton is in a very poor state of preservation each bone should be bagged separately, and each bag should be clearly labelled.

In the case of the skeleton of a neonate (newborn), each bone should be bagged separately, with the exception of the vertebrae which can be bagged together. Neonatal remains and others that are poorly preserved should be dried, wrapped in acid-free paper and then bagged and boxed.

Once the remains of a single skeleton have been lifted, bagged and labelled, all of the bags containing the bones of that individual should be placed in a large, clearly labelled box.

Disarticulated human remains should not be discarded; they should be recorded, collected, bagged and labelled by context.

Further advice may be obtained from the osteoarchaeologist at all stages of the excavation.

2.4 Transportation of the skeleton

There are three main rules to follow when transporting skeletal remains:

ensure that the bones cannot fall out of bags or boxes and become lost or commingled;

ensure that the bones are securely packaged;

do not pack heavy artefacts or equipment on top of skeletal remains.

3. POST-EXCAVATION TREATMENT

Once the remains are out of the ground, a primary concern is that the remains of each individual are kept together and not mixed with those of other skeletons. Whatever system you devise for washing and drying remains should be designed on this basis. Similarly, the remains of each individual should be packaged together for long-term curation. The osteoarchaeologist should be consulted at any stage of the post-excavation processing of the remains if further advice is needed.

3.1 Washing the skeleton

The osteoarchaeologist should be consulted before any of the remains are washed. Poorly preserved material should not be washed and the osteoarchaeologist can advise on this matter. Material that is not washed should be allowed to dry completely. Excess earth and dust can be removed by careful brushing before the remains are bagged for long-term storage.

Bones should be washed with care using soft brushes and damp sponges in a shallow basin of lukewarm water.

Never completely immerse a bone or allow it to become saturated.

Never, ever wash the remains of more than one skeleton in a single basin.

Water should be changed after washing each skeleton.

When washing teeth take care not to damage the enamel or to remove deposits of dental calculus. A brush will remove these important deposits and could damage the tooth enamel. Always use a damp sponge.

Handle the cranium with particular care and ensure that all soil is removed from its interior. Soil left in the cranium will shrink and harden, causing considerable damage to the bones.

3.2 Preparing the remains for analysis

Once the remains have been washed, allow them to dry at room temperature and out of direct sunlight.

The drying bones should be laid out in such a way as to minimise the possibility of the remains of different individuals being mixed.

Never apply preservative agents, consolidants, varnish, glue or adhesive tape to bone.

Bones must be completely dry before they are bagged for long-term storage.

Do not write directly on the bones. Rather, following the system outlined in Section 2.3, carefully package the bones into clearly labelled, clean bags. In the case of poorly preserved remains, wrap these carefully in acid-free paper and / or bubble-wrap before placing them in the clearly labelled bags. Never pack bones in cotton wool. Finally, place all of the bagged bones from a single individual into a clearly labelled, stout-lidded, cardboard box. If the remains are put into storage for any length of time before their analysis, they should be stored in suitable boxes and these should be stacked on shelves. They should not be stacked on top of one another from floor to ceiling: as the boxes at the bottom will collapse owing to the weight of those on top. All boxes should be labelled and stored out of direct sunlight so that the labels do not fade.

The remains are then ready to be transferred to the osteoarchaeologist.

3.3. Choosing an osteoarchaeologist

Specialists who analyse human remains from archaeological contexts have been variously named: osteologists, palaeopathologists and bioarchaeologists. The generally agreed term is now osteoarchaeologist. Choose an osteoarchaeologist who:

has a recognised qualification in archaeology, and / or has a recognised qualification pertinent to the study of archaeologically retrieved human remains, is also a member of a recognised professional organisation.

4. CREMATED REMAINS

Cremated human remains are a common occurrence in Ireland, especially on prehistoric sites. The incineration of a cadaver does not reduce the bones to ashes. Cremation produces large pieces of burnt bone, more brittle than unburnt bone which can easily be broken. There is evidence from a number of sites that cremated bone was processed in

various ways in the past. This processing includes the deliberate crushing of remains and the sorting of pyre materials. If the osteoarchaeologist is to have any chance of distinguishing between cultural behaviour in antiquity and taphonomic changes that occurred at the time of excavation, it is important that cremated remains be treated with great care to ensure minimum of disturbance to the deposit.

4.1 Excavation

If the excavation director anticipates the presence of cremated remains on a site, arrangements should be made to ensure that an osteoarchaeologist is present on site for the duration of the excavation. If this is not possible, the osteoarchaeologist should be consulted on a regular basis. In the absence of the osteoarchaeologist, the adoption of the following procedures should minimise the disturbance that is caused to cremated material encountered during excavation.

Before the recovery of the remains, the deposit should be photographed and drawn according to the protocol outlined in Section 2.2.

If the remains are contained in an urn or other pot that is complete, the pot should not be emptied in the field. It should be retrieved with its contents so that it can be emptied under laboratory conditions by the osteoarchaeologist. This should be done in the presence of the excavation director and a conservator.

If the cremated remains are not contained in a pot or if the latter is broken, the cremated material should be excavated in 5cm layers which should be bagged separately and clearly labelled. This allows the osteoarchaeologist to check for differential deposition within the deposit.

No attempt should be made to separate bone from the surrounding matrix. The entire contents of the context in which the cremated remains occur (i.e. soil, charcoal, pebbles, ash) should be retrieved.

Large bone fragments that are recovered during the excavation should be bagged separately, clearly labelled and packed in boxes to prevent further fragmentation.

If there is any unusual variation in the manner of deposition of the cremation or if a pyre site is suspected, the osteoarchaeologist must be consulted as a more detailed recording of the remains may be necessary.

4.2 Post-excavation treatment

The entire cremation deposit with all associated soil and charcoal from the particular context should be submitted to the osteoarchaeologist for analysis.

DO NOT PROCESS CREMATION DEPOSITS

The osteoarchaeologist should separate the burnt bone from the charcoal and earth of the deposit.

This should be done as soon as possible after material is excavated to prevent further fragmentation and deterioration.

5. THE BONE REPORT

A basic bone report is required for every skeleton or group of skeletons excavated from an archaeological site. **There should be no attempt to short-cut this process by selecting only a sample of burials for analysis.**

If you cannot afford the bone report do not excavate.

The osteoarchaeologist needs to access the following to provide a proper bone report:

- all skeletal material, correctly packaged and labelled;
- completed on-site skeleton recording sheets;
- photographic record of the burials and any relevant contexts;
- an overall plan of the site (scale 1:50cm) and plans of individual skeletons (scale 1:20cm);
- an initial site report with summaries of stratigraphic and dating evidence, if any.

Although the emphasis of reports may vary according to the osteoarchaeologist selected, it is generally accepted practice that a standard report on a large sample of skeletons ($n > 50$) should include information about demography, general health status and diet. With smaller samples it may not be possible to carry out statistically valid analyses of some of these parameters and these reports may simply consist of descriptions of individual burials.

Most of the information contained in a standard report can be obtained by visual inspection of the remains but, if necessary, provision should be made in the budget for radiographic analysis of certain diseased bones. The report should include a photographic record of significant palaeopathological lesions and allowance for this should be made when budgeting for the analysis. Large-scale radiographic or biochemical analysis, or scanning electron microscopy is outside the remit of a basic bone report and the developer should not be expected to fund this. If these are required, funding should be sought elsewhere.

Both the excavation director and the osteoarchaeologist have an obligation to make the results of their work available to the wider community. A publication format should be agreed between the excavator and the osteoarchaeologist.

6. CURATION OF REMAINS

On completion of the osteological report, the osteoarchaeologist will return the material to the excavation director, who has responsibility for organising their short-term care. In the Republic of Ireland, no decision about the storage of the remains can be taken without consultation with the National Museum of Ireland. Since all excavated bones are considered archaeological artefacts, the museum has responsibility for their long-term curation.

In Northern Ireland, if the Ulster Museum is expected to be the repository of the remains, they must be consulted early in the process.

Conditions relating to Excavation Licences granted under the National Monuments Acts 1930-1994

3(a) Under the provisions of the National Monuments Acts, all *archaeological objects* are the property of the State. The National Museum of Ireland is the State's repository for *archaeological objects*. The licensee is not at liberty to enter into private arrangements regarding the disposition of material. The National Museum shall be consulted by the licensee regarding the temporary storage of excavated finds.

Conditions relating to Excavation Licences granted under the Historic Monuments and Archaeological Objects (Northern Ireland) Order 1995

The licensee shall report the finding of any archaeological object in accordance with Section 42 of the Historic Monuments and Archaeological Objects (Northern Ireland) Order 1995 and shall in all other respects comply with the said Section 42.

Consultation with the National Museum about storage facilities and box sizes will also be necessary. The National Museum has provided guidelines on boxing finds for long-term curation. The shelf units in the museum stores are 90cm wide and most shelves are 60cm deep though there are also some deeper units (90cm). Height is adjustable up to 2m.

Boxes should be of a size suitable to fit the shelf-unit size outlined above. The specification for boxes are as follows: low-acid millboard (1200 micron) with flat copper-wire stitching and with 80mm lift-off lids.

Boxes in the following sizes are generally available:

Type	Length	Width	Height
A	1600mm	290mm	200mm
B	1430mm	290mm	200mm
B	2430mm	290mm	300mm
C	1200mm	190mm	100mm
D	1160mm	90mm	90mm

Excavators wishing to purchase boxes should conform to the above specifications. Boxes should be of sufficient gauge to enable them to be stacked without damaging the objects. Excavators who have already boxed finds should check with the Duty Officer, National Museum of Ireland in advance of sending finds to the museum. Recycled boxes designed for other purposes; damaged boxes; outside boxes or other containers will not be accepted.

When skeletal remains are deposited with the museum, the following are required:

a full site report with plans and drawings;

a copy of the completed bone report;

all other specialist reports;

the skeletal material, properly bagged, labelled and boxed for long-term curation.

A licence is also needed for any analysis where the remains are to be altered in any way. The excavation director may, for example, wish to use some of the bone for radiocarbon dating or some other form of destructive analysis. In order to do this he / she must apply to the National Museum for both an export licence and for a licence to alter an archaeological artefact. The museum may also require a replica of the bone that is to be destroyed. It is recommended that as little bone as possible is used, especially where prehistoric bone is involved. To this end, it is advisable to use the Accelerator Mass Spectrometer method as this needs a very small sample of bone.

Conditions relating to Excavation Licences granted under the National Monuments Acts 1930-1994

3(b) The licensee is reminded that it is illegal to export archaeological objects, even on a temporary basis, without a licence from the National Museum of Ireland. It is also illegal to alter, conserve or destructively sample artefacts without a licence from the National Museum. Applications for these licences should be made to the Keeper of Irish antiquities (Licences).

In Northern Ireland, there are no special regulations or requirements regarding the export of or destructive sampling of human remains from archaeological contexts.

In some situations, it may be suggested that the human remains be reburied. In the Republic this **cannot** take place without the written consent of the National Museum. The licensee is not at liberty to enter into private arrangements regarding the disposition of material (Conditions relating to Excavation Licences granted under the National Monuments Acts 1930-1994). If reburial is to occur, the skeletons should be placed in individual boxes and an accurate record of their location should be lodged with the National Museum.

If human remains are to be exhumed and removed from Church of Ireland properties in Northern Ireland, it may be the case that the relevant church authorities will only grant a faculty if it is agreed beforehand that the remains will be reburied in consecrated ground after a set period of time has elapsed.

For material found in Northern Ireland, if it is expected that the Ulster Museum will be the repository and the museum has agreed, boxing and labelling should follow discussion with the museum, and it will not be received unless it is properly boxed and labelled. The museum does not require a full site report with plans, or specialist reports (these should be deposited with the Environment and Heritage Service), but it will require a brief excavation report and a listing of all the objects put into its keeping. There is no requirement in the North for permission to be sought for the remains to be sampled, dated or sent out of the country for study (as long as they have been reported under the legislation).

7. RECOMMENDED READING

Bass, W. M. (1987) (3rd edition) *Human Osteology: A Laboratory and Field Manuals*. Special Publication No. 2, Missouri Archaeological Society.

Brannon, N., (1998) eLetter to IAPAí, *IAPA Newsletter* 26, 6-7.

Brothwell, D.R., (1981) (3rd Edition) *Digging Up Bones*, British Museum Natural History Department, London.

Mays, S., (1998) *The Archaeology of Human Bones*, Routledge, London.

McAuley, M., (1993) 'The Law and Burial Archaeology in Northern Ireland'.
Unpublished report no. B91/94, Historic Monuments and Buildings Branch, DOE.

O Sullivan, J., (1997) 'Burials in archaeology and the law', *IAPA Newsletter* 25, 9-13.

Roberts, C. and Manchester K., (1995) (2nd edition) *The Archaeology of Disease*.
Alan Sutton Publishing Ltd. Gloucestershire.

Ubelaker, D.H., (1989) (2nd edition) *Human Skeletal Remains: Excavation, Analysis and Interpretation*. Smithsonian Institution, Washington.

8. SOURCING MATERIALS

All telephone and fax numbers are listed with long-distance prefixes used from within the jurisdiction in which the company is located.

To phone or fax a number in the Republic of Ireland from Northern Ireland, dial 00 353 before the number listed below and drop the 0 from the area code. To phone or fax a number in Northern Ireland from the Republic, dial 048 instead of 028 followed by the number listed here.

Skeletal Recording sheets:

Appendix 2 to this document

National Monuments Section, Planning and Heritage Division, Dept. of the Environment, Heritage and Local Government, Dun Sceine, Harcourt Lane, Dublin 2.

Tel: (01) 411 7100

Fax: (01) 478 0770

Boxes (low-acid and acid-free):

Caspac, c/o P. Cassidy, 24 Lagan Rd., Keady, Co. Armagh, BT60 3LA

Tel: (028) 3753 8317

Boxes (non-acid-free):

McConnell Archive Storage, Unit 11, Mallusk Park, Mallusk Rd., Newtownabbey, Belfast BT36 8FS

Tel: (028) 9034 2223

Fax: (028) 8084 2227

Email: operations@mcconnellarchives.com

<<mailto:operations@mcconnellarchives.com>>

Coleman Printers, Unit 19 - 20, Togher Industrial Estate, Cork
Tel: (021) 4968 222
Fax: (021) 4968 771
Email: colmansbox@eircom.net <mailto:colmansbox@eircom.net>

Timothy O'Shea Ltd, Unit 2, Mayfield Business Park, Mayfield, Cork
Tel: (021) 4503 456
Fax: (021) 4503 456

The Packaging Centre, Fox & Geese, Naas Rd, Dublin 12.
Tel: (01) 450 8759 or (01) 456 5384
Fax: (01) 450 7567
Email: sales@thepackagingcentre.ie <mailto:sales@thepackagingcentre.ie>

Boxes (corrugated plastic):

Killyleagh Box Co. Ltd, 39 Shringley Rd, Killyleagh, Co. Down
Tel: (028) 4482 8708
Fax: (028) 4482 1222
Email: sales@killyleaghbox.co.uk <mailto:sales@killyleaghbox.co.uk>

Bags (self-seal, with write-on panels):

Davidson and Hardy (Lab Supplies) Ltd, 453-459 Antrim Rd, Belfast BT 15
Tel: (028) 9078 1611
Fax: (028) 9077 2801
Email: info@dhlab.com <mailto:info@dhlab.com>

Guy & Co., Boland Industrial Estate, Mallow Road, Cork
Tel: (021) 4305 844
Fax: (021) 4305 845

Coleman Printers, Unit 19 - 20, Togher Industrial Estate, Cork
Tel: (021) 4968 222
Fax: (021) 4968 771
Email: colmansbox@eircom.net <mailto:colmansbox@eircom.net>

AGB Scientific Ltd, Unit 136a, Dublin Industrial Estate, Dublin 11
Tel: (01) 882 2222
Fax: (01)882 2333
Email: sales@agb.ie <mailto:sales@agb.ie>

Metro Storage Systems Ltd, Unit 4, Belgard Industrial Estate, Tallaght, Dublin 24
Tel: (01) 461 0666
Fax: (01) 461 0088
Email: sales@metro.ie <mailto:sales@metro.ie>

Bubble-wrap and Polystyrene Chipped Foam:

Coleman Printers, Unit 19 - 20, Togher Industrial Estate, Cork
Tel: (021) 4968 222
Fax: (021) 4968 771
Email: colmansbox@eircom.net <mailto:colmansbox@eircom.net>

Metro Storage Systems Ltd, Unit 4, Belgard Industrial Estate, Tallaght, Dublin 24
Tel: (01) 461 0666
Fax: (01) 461 0088
Email: sales@metro.ie <mailto:sales@metro.ie>

Permanent Pens:

John Bush Systems, 90 Great Victoria St, Belfast BT2 7BD.
Tel: (028) 9032 5311
Fax: (028)9032 5825

D. & A. O'Leary, DAOL Business Centre, Tramore Road, Cork
Tel: (021) 4271 221
FAX: (021) 4312844

AGB Scientific Ltd, Unit 136A, Dublin Industrial Estate, Dublin 11
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Fax: (01)882 2333
Email: sales@agb.ie <mailto:sales@agb.ie>

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K. & M. Evans Ltd, 5 ñ 6 Meeting House Lane, Off Maryís Abbey, Dublin 7

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Fax: (01) 872 6940

Email: info@kmevans.ie <<mailto:info@kmevans.ie>>