

## **Skeletal Sampling and Preparation**

### **1.0 Principle, Spirit and Intent**

This section presents recommendations for cleaning or preparing skeletal remains for examination and sampling. Skeletal preparation and sampling should be done in a manner that limits or prevents contamination, unnecessary destruction, or adverse alteration of the remains.

### **2.0 Purpose and Scope**

This document outlines best practice procedures for the cleaning, reconstruction, and preservation of skeletal remains, and the collection of skeletal samples. Practitioners of forensic anthropology should implement these guidelines to the fullest extent as applicable, practical and appropriate. In the absence of specific guidelines or in the case of conflicting procedures, the principle, spirit and intent should be met.

### **3.0 General Principles**

In order to make skeletal material and features more accessible for forensic anthropological analyses, and in order to procure material that may have additional investigative value, it is sometimes necessary to sample and/or process skeletal material or other tissues associated with skeletal material. The condition of the remains at arrival and throughout the process of preparation and sampling should be documented. Any alterations caused by the process of sampling and preparation should also be documented.

### **4.0 Best Practices**

#### **4.1 Skeletal Sampling**

Sampling of soft tissue for other analyses (e.g., DNA) may be needed and should be conducted prior to skeletal preparation.

All applicable data collection procedures should be completed before a skeletal element undergoes sampling.

Sampling of skeletal elements for DNA analysis should employ techniques and equipment that help reduce and control contamination, including the use of blades or saws that are new and have been treated with bleach and/or UV light.

## 4.2 Skeletal Preparation (Processing)

There are three general approaches (mechanical, chemical, and entomological) in skeletal cleaning and preparation. The use of various methods and techniques within these methods is acknowledged and accepted. Decisions regarding preparation should include consideration for the types of analyses being conducted and whether or not analysis or long-term curation is the goal.

Care should be taken to allow discovery of additional evidence (*e.g.*, entomological, projectile) during processing. Any additional evidence should be handled in accordance with applicable procedures.

Radiographs should be taken on remains prior to processing to detect or visualize objects such as foreign material, sesamoids, and secondary ossification centers.

As much adhering soft tissue as possible should be removed without the use of tools. If tools are required in the removal of soft tissue and other materials, tools that will minimize alteration (cuts, scratches) should be used. Preferable tools include those made of wood or plastic, although it is recognized that tools such as scissors or scalpels may be necessary. All tools used in preparation and sampling should be documented. Coordination with appropriate agencies regarding the dispensation of soft tissue should be done prior to processing.

Any procedure used to macerate the soft tissue is acceptable as long as it does NOT:

- Alter the dimensions of the bone
- Deteriorate the surfaces of the bone
- Introduce artifacts
- Change the structure of the bone
- Render the bone unsafe or unstable for handling
- Render the bone unfit for other analyses (*e.g.*, DNA analysis).
- Create opportunity for commingling of cases.
- Destroy chain of custody and security.

Upon completion of skeletal preparation, skeletal elements should be labeled.

In the event that remains require reconstruction, the process and materials used should be documented. Any reconstruction methods or materials used should be reversible.

## 5.0 Unacceptable Practices

The following practices are considered unacceptable and should be avoided when processing and sampling skeletal remains:

- Use of chemicals that damage or destroy bone or DNA. For example, bleach, hydrogen peroxide, and formalin may be used in some

situations, but the destructive consequences and personal health risks of the use of these chemicals must be recognized.

- Excessive soaking of skeletal elements and excessive heat that can damage or destroy bone and DNA.
- The unnecessary alteration or destruction of skeletal elements that provide the most useful information for identification (*e.g.*, restored teeth, healed trauma, age indicators).
- The unnecessary consumption of complete skeletal elements or complete sectioning of skeletal elements.
- Unnecessary reconstruction of skeletal elements.