



# André E. Lalonde AMS Laboratory

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## Sample Failure Charging Policy - Radiocarbon Laboratory

While our experienced technicians do their utmost to handle and process samples with due care, failure of samples during processing is an inevitable possibility. The AEL AMS Laboratory reserves the right, under certain circumstances, to recover partial or full costs for laboratory treatment up to the point of failure.

Before sending samples, please feel free to inquire about the suitability of your material for radiocarbon dating. We are happy to discuss sample size and selection. After receipt of your submission, we will communicate with you during the preparation process concerning any issues that might arise which may affect a successful result. The most common causes of sample failure during the radiocarbon dating process are:

### 1. Bone samples without collagen, or in which the collagen is badly degraded:

Depending upon burial conditions, bones may be degraded and have negligible remaining collagen. Charred bone also has little to no remaining organic content. Collagen gives a bone strength so an easy way to assess the suitability of a bone for collagen extraction is to try to scrape at it or break it. Thick cortical bone should not be broken by hand and should not scrape into powder easily. Thin bones (e.g. ribs) may snap by hand, but should not crumble.

### 2. Samples that are too small or that contain insufficient carbon:

While the amount of organic material required for AMS analysis is quite small, there are still occasions when the sample yields insufficient material for successful dating. If this is noted during the initial stages of pretreatment, we will notify the client of our observations and discuss alternatives. If, *due to the nature of the sample itself* (e.g. sediments), the CO<sub>2</sub> produced from combustion is too small to make graphite or the graphite yield is insufficient for successful measurement, we reserve the right to claim for costs of pretreatment up to the point of failure.

### 3. Samples that are too contaminated for successful dating:

Examples in this category might include groundwater containing sulphur compounds which poison the graphite reaction impeding sample reduction.

### ***Samples that fail due to laboratory error***

If a sample fails due to staff or instrumental error, it will be repeated at no cost to the submitter. If the submitter is unable to supply additional sample material to repeat the analysis, no charge will apply.

### Charges for sample failure

For samples which fail due to the nature of the sample itself, and which are outside of the control of the laboratory, the AEL AMS Laboratory reserves the right to apply the following charges:

**Table 1.** Sample pre-treatment costs for failed samples.

Reason for Failure	Cost per sample (CAD)	
	Canadian Academic Non-Profit Government	Commercial Independent International
Bone samples which do not yield sufficient collagen	\$190	\$270
Organic samples which fail after combustion	\$60	\$85
DIC water samples which fail to yield sufficient carbon	\$115	\$165
DOC water samples which fail to yield sufficient carbon	\$205	\$290
Carbonate samples which fail after acid dissolution	\$90	\$125