British Institute
of Dental & Surgical
Technologists

CPD Article

ISSUE 7

Proud of our History, Looking Forward to the Future

BIDST CPD

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Skillbond

dental technology you can trust

Ref No. TS09-01

A silver **lining**

What Happens to gold waste? The honest approach employing technology and experience

The attractiveness of gold as an investment vehicle in the troubled economic times that we face is not difficult to understand, or that this has been further compounded by political unrest in the Middle East and natural disaster in Japan. It is also unsurprising that rises in the gold price have led to a boom in the assay and refining business: witness the number of high street and postal cash for gold refiners that have appeared seemingly from nowhere. Here, refiners have sought to compensate for the reduced demand and pressured margins within their traditional markets by increasing their supply to the booming investment sector, thus fuelling a seemingly insatiable demand for 'scrap' gold.

Traditional consumers of gold and other precious alloys such as the dental profession have seen their commodity prices soar at exactly the wrong point in the economic cycle. Nobody can be sure how long this boom will go on for, but simple logic indicates that until faith returns to the credit worthiness of sovereign states, gold will continue to be seen as a safe haven for investors. This is compounded by the fact that inflation is relatively high and interest rates are historically low eroding the value of individual savings. This means that the opportunity cost of holding gold is relatively low even though the investment return is solely reliant on its continued increase in value as it lacks the ability to earn. However we should be mindful that some commentators liken the rise in gold prices to that of technology stocks and warn of a potential bust.

At a practical level it is important that we obtain the best return for our dental waste, but the assay and refining of precious dental waste are processes that can seem far from transparent. After all there is no way of knowing how much precious metal is in your waste and consequently you are totally reliant on the integrity of a third party, who will always seemingly claim to offer the best return at the lowest refining cost.

As with any other aspect of business the individual practice will have preferred suppliers and in some instances relationships that have proved satisfactory over a number of years will prevail. However, at the point of handing your goods over you, or they, cannot know what precious alloy is contained within the package, which can be just as much a source of frustration for the refiner as it is for the client.

Given the current climate it is therefore wise for the client to ask the refiner to describe the complete sequence of processes that will define the final monetary return. They should consider the methods employed by the refiner and whether they have the economies of scale to invest in the latest technologies that can generate the best return.

The Argen Corporation has developed a sequence of events that is intended to guarantee the transparency of every stage from the receipt of your package to the assay of the final bar or rather melt as we shall come to later. The final settlement is then calculated and credited to your account according to a completely open charging formula. Final settlement can be by a number of methods including account credit,

cheque, new alloy or even bullion which creates a convenient way of turning your scrap into an investment opportunity.

Straightforward advice is also available on how to maximize your return although much of this is quite literally good housekeeping. It is prudent to collect higher grade precious waste such as gold crowns in a separate container to lower grade waste. Also, given that the market can be volatile it is wise to send scrap in regularly to 'smooth' changes in commodity prices and market risk. For example, at the time of writing the gold price had fallen back $160 just two days after hitting a new high.

Secure waste containers are provided on request and collection is arranged either in person or by prepaid courier. Naturally the process really begins when the scrap in whatever form arrives at the refinery where it is photographed and weighed; this data is then permanently recorded so that you are able to verify that it is exactly as you sent it (fig 1).

The material is then ground down, mixed with flux and melted for the first time; the purpose of the flux is to help separate the metal from non-metal which forms a waste product called slag (figs 2 and 3). To guarantee the best possible return the slag is then reprocessed to make sure that no metal has been left behind and improve the yield.

The mass of metal retrieved is then melted for a second and normally final time, and whilst still molten a sample is taken in a vacuum pin tube. At this point the mixture of metals will be at their most homogenous and thus evenly distributed which will allow a highly accurate assay. Once the sample has been taken the melt is allowed to solidify into a bar prior to being weighed and recorded.

The more conventional method of sampling is to allow the mass of metal to solidify into an indeterminable alloy bar and drill a core sample for analysis. However this will tend to be less accurate as the mixture will solidify in different phases meaning that the different metals will not be evenly distributed within the bar, making sampling a far less accurate and potentially misleading process.

The assay process involves weighing and then cutting the sample from the vacuum tube into three sections which are then individually put through an identical series of dissolution tests which avoid any violent reactions (fig 4). The solutions produced are then tested by an in-house chemist using an inductively coupled plasma machine, which reading to an accuracy of 99.995 per cent is the most sophisticated type available, and is capable of sampling four precious metals at a time.

The assay results for all three samples are then compared and providing that they are consistent aggregated to calculate the final return for the surgery or laboratory, unless there is any significant variation of composition between the three samples in which case the complete process is repeated to guarantee fairness and accuracy.

You or the refiner can never be one hundred per cent certain as to what is contained within your waste at the point of handover. However the process can be made transparent, accountable and convenient by the combination of new technology and traditional honest service which Skillbond and the Argen Corporation claim as their hallmarks.

Fig 1: Items are photographed and weighed on arrival.

Fig 2: The waste is ground down melted with flux and allowed to solidify. Note the "slag" on the upper surface of the solid mass.

Fig 3: Dissolution testing.

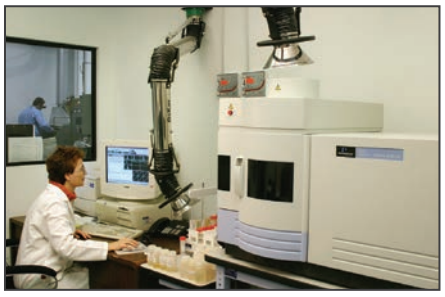

Fig 4: Assay Results using Inductively Coupled Plasma Machine.

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1. When handing your goods over for refining who knows exactly how much precious alloy is contained within the package?

a) the refiner

b) the laboratory owner/manager

c) neither

2. In order to guarantee the best return is it best to:

a) grind precious and non precious alloys in separate locations

b) grind precious and non precious alloys in the same location

3. What is the purpose of the flux when the waste is melted?

a) to dissolve the filter bag

b) to help separate the metal from non metal

c) to add extra heat

4. Why is the retrieved metal melted for a second time?

a) to ensure the mixture of metals will be at their most homogenous

b) to burn off any residues within the melt

5. How is the molten alloy sample taken?

a) in a test tube

b) in a vacuum pin tube

c) in a silicone tube

6. How many sections is the sample cut into for analysis?

(a) three

(b) five

(c) seven

7. When there is a significant difference in analysis results between sections of the sample:

(a) the entire process is repeated

(b) the worst sample is used as the final result

(c) the complete mass of material is returned to the customer

Name:

GDC Number

Address:

Postcode:

Telephone no: (in case of any queries)

Signed:

Date: