How complicated is A?

Assume fissions decay directly to with a cumulative fission yield [\* = reminder some yield could be lost due absorption earlier in the mass chain, some yield could be gained by absorption from other mass chains]

**During Irradiation:**

This assumes are constant, and a single known energy group. We will also assume a single irradiation time (for shot irradiation times the \* terms might need special modification).

does not consider cumulative yield, but rather incorporates addition from other mass chains (directly to nuclide 1 (not 2).

**Decay:**

**Solutions:**

1. Assume

During Irradiation:

Decay:

Ratio:

Assume Not zero

During Irradiation:

Decay:

Ratio:

1. Assume

During Irradiation:

Decay:

Ratio:

1. Assume

During Irradiation:

Decay:

Ratio:

1. Assume

During Irradiation:

Decay:

Ratio:

What about and ?

Remember:

* does not consider cumulative yield, but rather incorporates addition from other mass chains (directly to nuclide 1 (not 2)).
* [\* = reminder some yield could be lost due absorption earlier in the mass chain, some yield could be gained by absorption from other mass chains]

Estimates for these could be determined as follows:

Where refers to a cumulative yield in the same mass chain as 2. The factor associated with it represents the percent lost in the mass chain due to absorption before arriving to isotope 2.

Where refers to a cumulative yield in the mass chain below 2. The actor associated with it represents the percent gain to mass chain 2.

This is depicted below:

Estimates for , assuming there is no direct fission yield, could be determined as follows:

Depicted below:

This methodology was applied in instances with long half lives and sizeable aborbsation cross sections.

Most instances will utlize this ratio formula for mixtures of isotopes: