

Export of Renaissance Results to IMBA Professional Plus

The IMBA Professional Plus software supercedes the IMBA Expert software developed for the U.S. Department of Energy, by the Radiation Protection Division of the UK Health Protection Agency (formerly the UK National Radiological Protection Board) and ACJ & Associates, Inc. (Richland, WA, USA).

This software provides a user-friendly interface with the (HPA's) proprietary suite of Integrated Modules for Bioassay Analysis (IMBA), to analyze measurements of activity in the body and/or excreta and calculate the resulting doses. The software implements the International Commission on Radiological Protection's (ICRP's) currently recommended respiratory tract, tissue dosimetry, and biokinetic models for the reference worker, for 75 radionuclides.

IMBA Professional Plus consists of a base unit and various Add-Ons which increase the functionality of the software. Users can thus customize the software to meet their individual requirements.

Base Unit

The base unit enables the user to (a) assess an intake from bioassay measurement data; (b) calculate bioassay quantities at different times from a specified intake; (c) calculate equivalent organ doses and effective dose from a single intake. 75 nuclides are supported in the base unit. Output is both tabular and graphical and special tools enable data transfer between Windows™ applications.

Add-Ons

Each Add-On can be purchased individually and increases the functionality of the base unit.

Add-On 1 Multiple Intake Regimes

This add-on enables the user to deal with up to 10 separate intake regimes simultaneously. Thus when calculating doses or predicting bioassay quantities, the software automatically includes the contribution from each intake.

Add-On 2 Multiple Bioassay Types

This add-on enables the user to fit the intake to different bioassay types simultaneously. This add-on also works with Add-On 1 (Multiple Intake Regimes) to enable multiple intakes to be fitted to multiple bioassay data types simultaneously.

Add-On 3 Associated Radionuclides

This add-on enables the user to specify up to 30 additional associated radionuclides, defining the amount of each with respect to the indicator radionuclide. Subsequent dose calculations will include the components from all of the associated radionuclides.

Add-On 4 Uranium Mixtures

This add-on enables the user to specify a mixture of uranium isotopes (U-234, U-235, U-236 and U-238) for dose and bioassay calculations.

Add-On 5 Uptake from Wounds

This add-on enables the user to deal with intakes from a wound site. A generic wound model is specified by the user. This functionality is integrated automatically with all of the calculations (dosimetry, bioassay and intake fitting).

Add-On 6 Errors on Intake

In cases where an intake is being estimated from bioassay data, and all of the data are assumed to be normally distributed with a specified standard deviation, this add-on will propagate the errors to calculate their contribution to the error in the estimate of intake.

Add-On 7 Bayes Implementation

This add-on enables the user to use a Bayesian approach to estimate an intake.

IMBA Professional Plus

Dose Assessment Software for In Vivo Counting Applications

Add-On 8 Tritium Tool

Because the new ICRP tritium model is no longer a single exponential, it is no longer possible to use just the previous measurement to correct the current measurement. This add-on enables the user to select up to 10 previous tritium measurements, and to fit simultaneously the best 10 intakes.

Add-On 9 Compensation Type Calculations

This add-on enables the user to select an organ, and a date on which cancer was diagnosed in the organ. The program then calculates the equivalent dose to the organ in each (of up to 99) calendar years previous to the cancer diagnosis. A simple wizard for exporting this data to other files or databases is also included. This type of information is required as part of the process of estimating causation probabilities for compensation type calculations.

Add-On 10 Ingrowth of Americium

The interpretation of measurements of Am-241 in an individual can be complicated if the individual has also had an intake of Pu-241 because of the continuous ingrowth of Am-241 from Pu-241. This add-on allows the user to take ingrowth into account automatically when performing calculations.

Add-On 11 Statistics Package

This add-on allows the user to bring up useful statistical information immediately after fitting intakes to measurement data. It calculates the chi-square value for each bioassay type, the total chi-square and the associated P value (probability of obtaining a chi-square greater than or equal to the calculated value by random chance).

Add-On 12 ORTEC Import Tool

This add-on allows the user to import information from the Renaissance database directly into IMBA Professional Plus. The user can then use the software directly after a measurement to obtain the best estimate of the intake and the corresponding doses to organs and the total effective dose.

IMBA Professional Plus can be ordered directly from HPA at www.lmbaprofessional.com or can be supplied by ORTEC as part of a complete system.

Specifications subject to change
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