

NRC Dose3 v1.1.5.2 Release Notes

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Inputting more than 33 nuclides in GASPAR

When the GASPAR compiler was updated in version 1.1.5 to enforce array-bounds checking, some existing behavior now triggers an error. Previously, if a user supplied more than 33 nuclides in the GASPAR source term, the initial inventory printout would continue past the expected limit, showing the 34th and later nuclides. These extra entries were never used in any calculations, but they were still printed with garbage inventory values. This update removes that behavior so that nuclides beyond the first 33 are not printed at all.

LADTAP not printing dose results for age groups 5 yr old and younger (ICRP-72)

When the drinking-water consumption for the 5-year-old age group is set to zero, LADTAP was incorrectly skipping dose calculations for 5-year-olds, 1-year-olds, and newborns. This behavior traced back to a copy-and-paste error inherited from the ICRP-2 methodology, where the fourth age group (infants) was assumed to rely solely on drinking water. For the ICRP-72 age groups, this check has now been removed entirely, ensuring that dose results are generated even when drinking-water consumption is set to zero.

LADTAP saltwater invertebrate consumption for young age groups in ICRP-72

When using ICRP-72 dose coefficients at saltwater sites, LADTAP was mistakenly substituting freshwater invertebrate consumption values for the 5-year-old, 1-year-old, and newborn age groups. This behavior stemmed from a copy-and-paste logic error carried over from the ICRP-2 implementation, where infant invertebrate consumption was not supported. LADTAP has been updated to correctly read and apply the appropriate saltwater invertebrate consumption rates for the selected site type.

LADTAP saltwater invertebrate consumption

Additionally, the saltwater invertebrate consumption rates entered for the Max. Individual and Additional Usage Locations were not being printed into the input file or read correctly by LADTAP. This has been corrected so that the correct value supplied for the consumption rates at these locations is now used by LADTAP.

LADTAP cumulative population doses from drinking water

An issue was identified in LADTAP where, if multiple drinking-water usage locations were provided, the cumulative population dose did not print at all. Additionally, there was a logic error that limited the cumulative population dose calculation for the teen age group to only the first eight organs—an unintended copy-and-paste artifact from the ICRP-2 methodologies. As a result, cumulative doses would have been underreported when using ICRP-30 or ICRP-72 dose factor sets.

Because the cumulative dose output was already obscured in previous NRC Dose3 versions, this defect did not affect earlier reported results. The calculation and output routines have now been corrected.

LADTAP population doses from sport and commercial aquatic food pathways

LADTAP historically zeroed out the eighth organ in dose calculations, a legacy behavior carried over from ICRP-2 methodology, which included only seven organs. This logic was not updated for ICRP-30 and ICRP-72 calculations, resulting in the eighth organ dose being omitted when those dose-conversion factor sets were selected. The handling of the organ array has now been corrected to ensure all organs are properly included for ICRP-30 and ICRP-72.

LADTAP correcting ICRP-72 pathway consumption labels

Within each LADTAP pathway (e.g., irrigated food, leafy vegetables, and others), both individual consumption-rate doses and population consumption-rate doses are printed. An error was identified in the ICRP-72 output formatting:

- In the **individual consumption-rate** tables, the **5-year-old** and **10-year-old** labels were inadvertently swapped.
- In the **population consumption-rate** tables, the **child** group correctly used the **10-year-old** dose values, but the printed label incorrectly displayed **5-year-old**.

These labeling issues have been corrected to ensure all age-group dose values and labels align properly in ICRP-72 pathway outputs.