Problems of KERMA, DPA and helium production data in FENDL-3.0

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Overview -(1)

- We compared the KERMA and DPA data included in all the ACE and MATXS files in FENDL-3.0 with those in JENDL-4.0, ENDF/B-VII.1 and JEFF-3.2. As a result, the following problems are found out. We also produced ACE files of FENDL-3.0 with NJOY2012.8 and compared them.
- ^{1}H : No increase with the decreasing neutron energy in the low neutron energy. This is due to a NJOY bug. (Published to Nuclear Data Sheet)

KERMA of ^{1}H

#3

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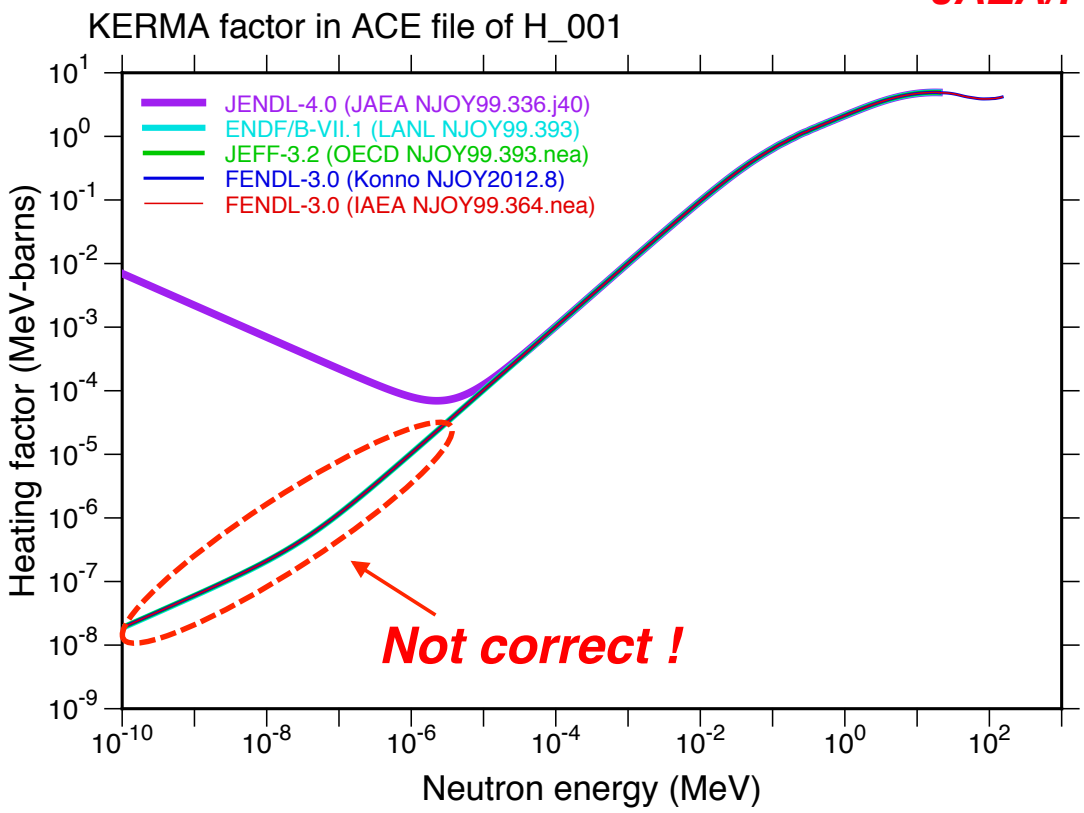

DPA of ^{1}H

#4

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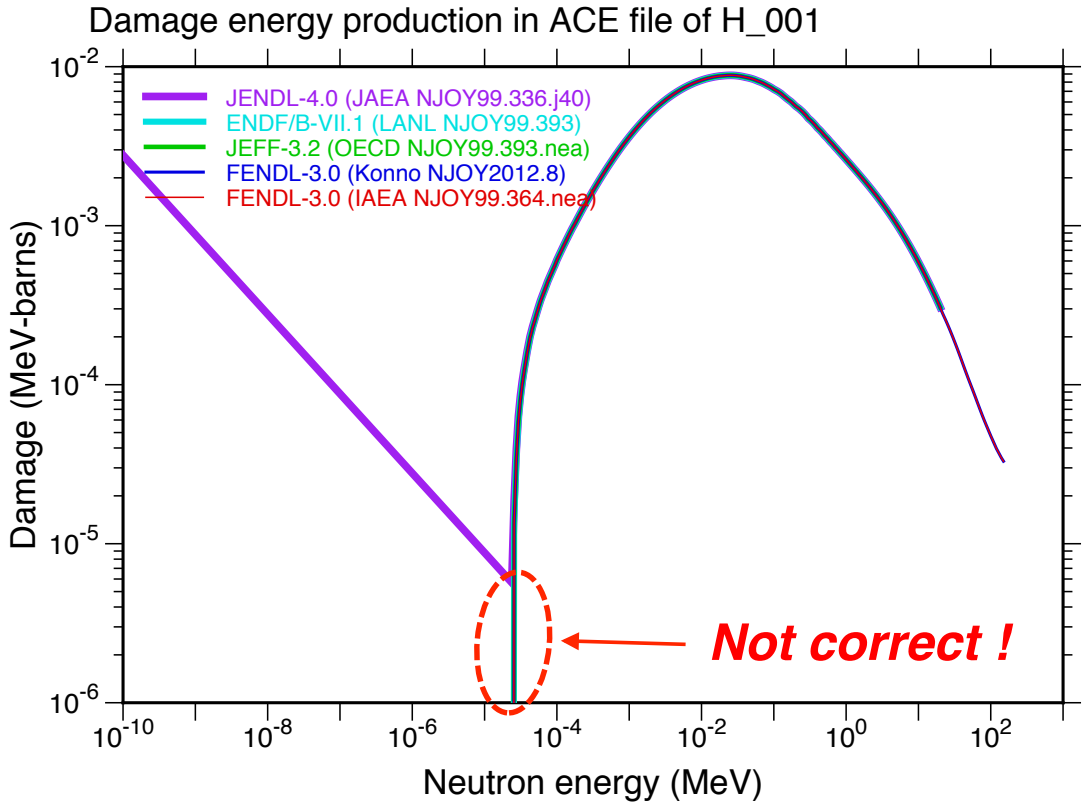
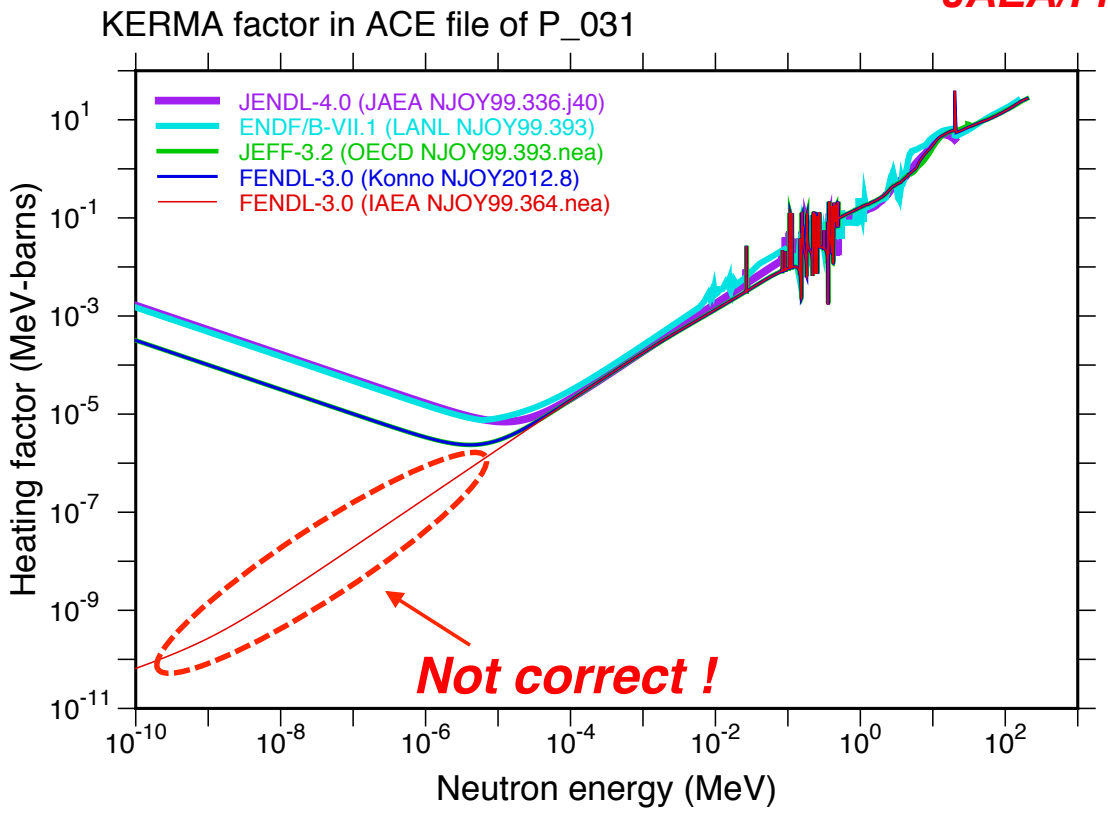


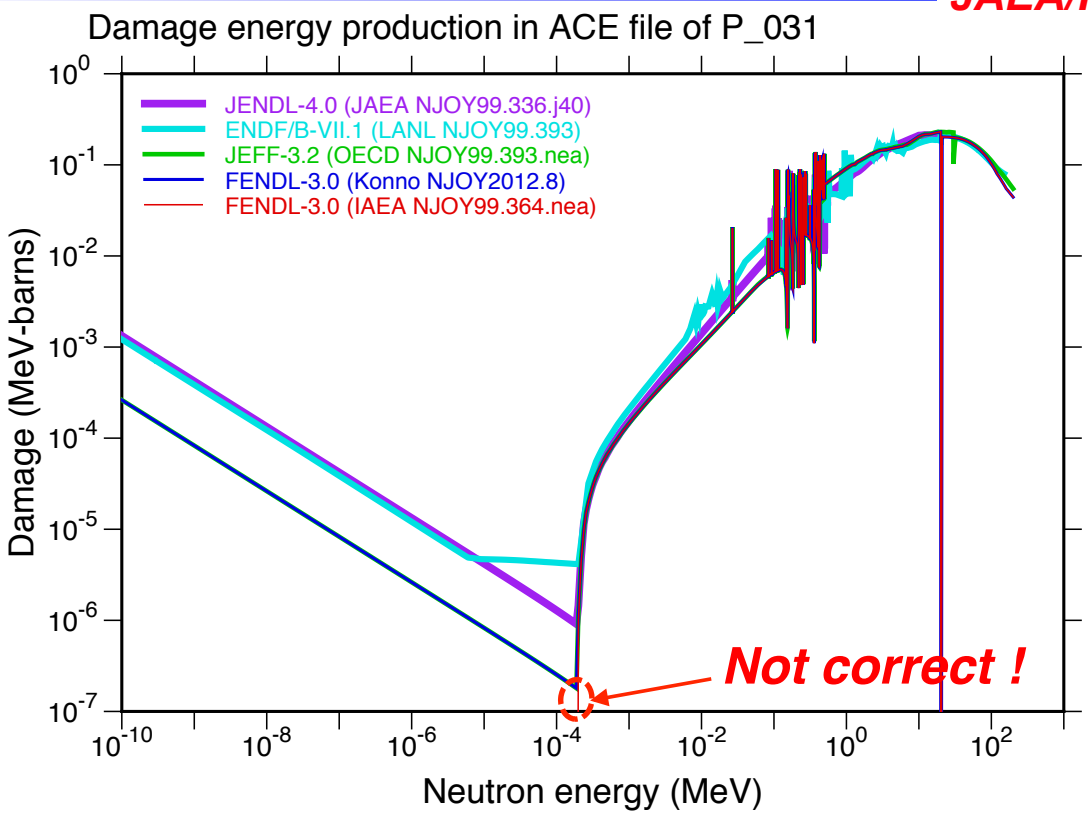
Overview -(2)

- ^{13}C, ^{15}N, ^{18}O, ^{31}P, ^{34}S, ^{36}S, ^{41}K, ^{50}Cr, ^{52}Cr, ^{53}Cr, ^{54}Cr, ^{58}Fe, ^{70}Ge, ^{72}Ge, ^{73}Ge, ^{74}Ge, ^{76}Ge, ^{138}La, ^{139}La, ^{175}Lu, ^{176}Lu, ^{185}Re, ^{187}Re, ^{195}Pt, ^{196}Pt, ^{198}Pt, ^{204}Pb, ^{206}Pb, ^{207}Pb : No increase with the decreasing neutron energy in the low neutron energy. This is due to the older version (99.364) of NJOY used for processing FENDL-3.0, except for ^{15}N, reasons for which are not specified yet. These data should be re-processed with the latest version of NJOY, NJOY99.396 or NJOY2012.8.

KERMA of ^{31}P



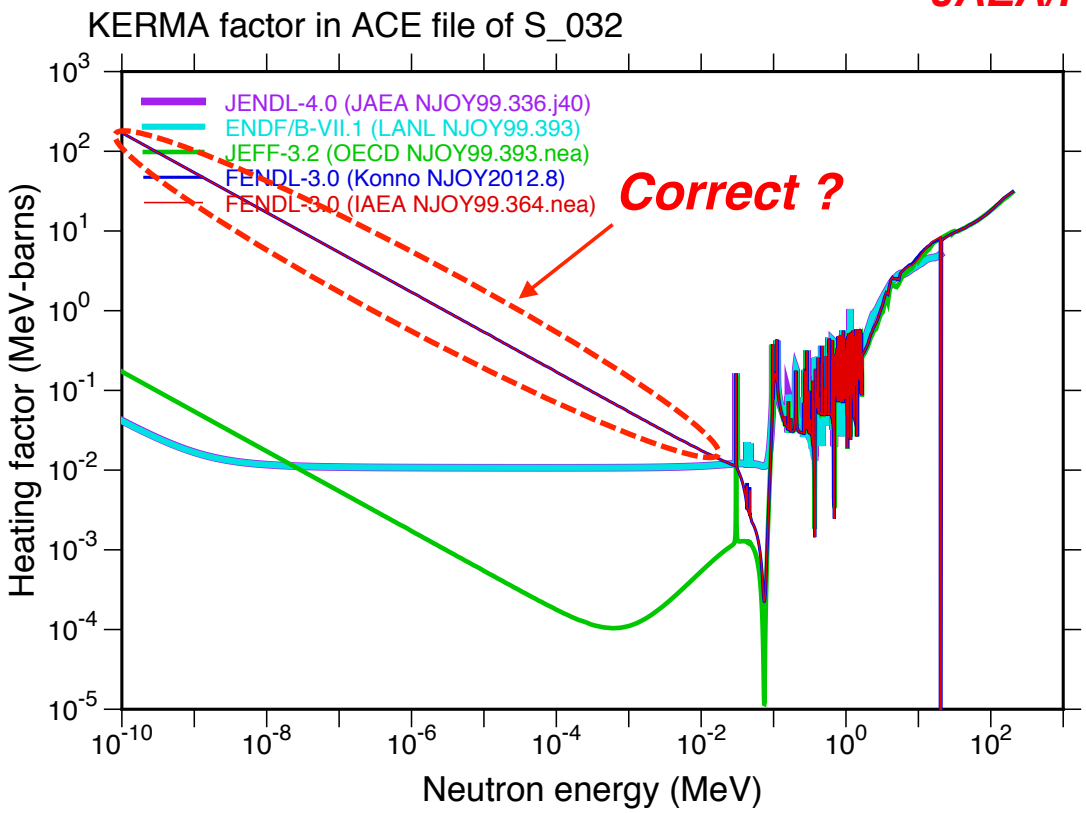
DPA of ^{31}P



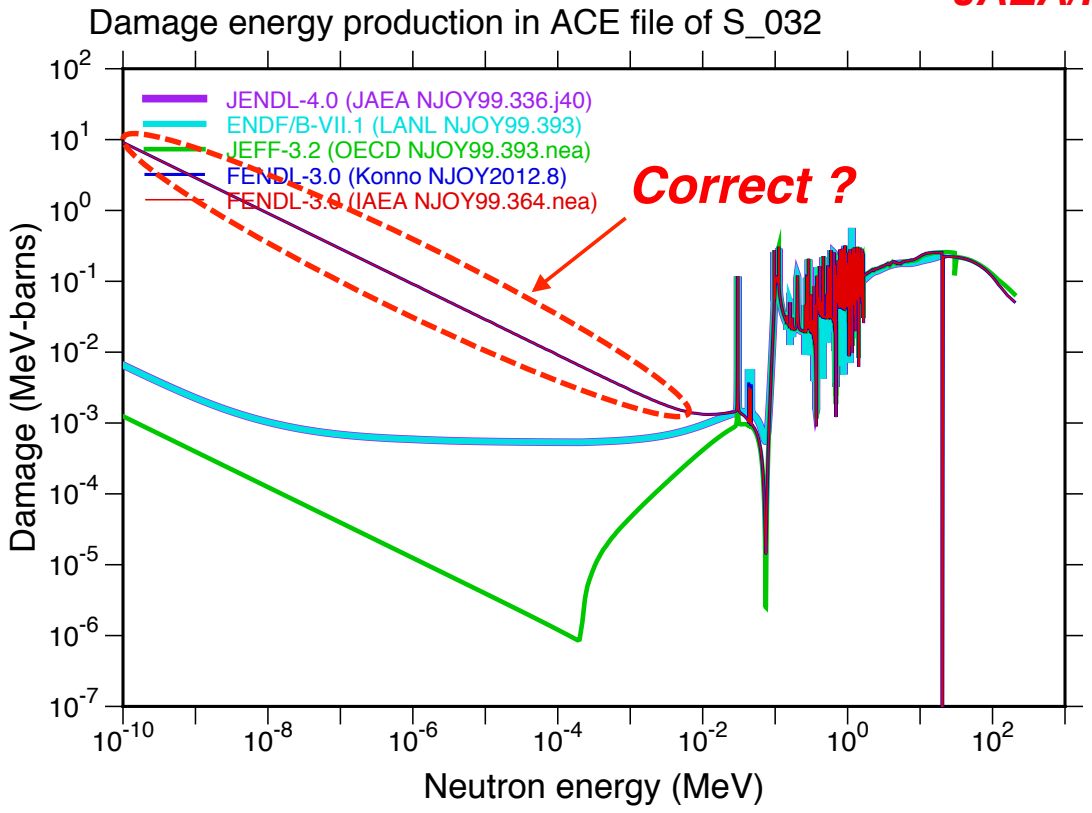
Overview -(3)

- **^{32}S, ^{33}S, ^{39}K, ^{40}K, ^{209}Bi : Drastically large KERMA and DPA data (only KERMA data for ^{39}K and ^{40}K) in the low neutron energy. This is due to huge helium production cross section data in the low neutron energy. It is required to check if the huge helium production cross section data in the low neutron energy are correct. If necessary, the helium production data for these nuclei in FENDL-3.0 should be revised.**

KERMA of ^{32}S



DPA of ^{32}S



Helium production cross section of ^{32}S #11

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