Argonne NATIONAL LABORATORY

Member of the US Nuclear Data Program

Decay Data Evaluation Project (DDEP): Status and Future Perspectives

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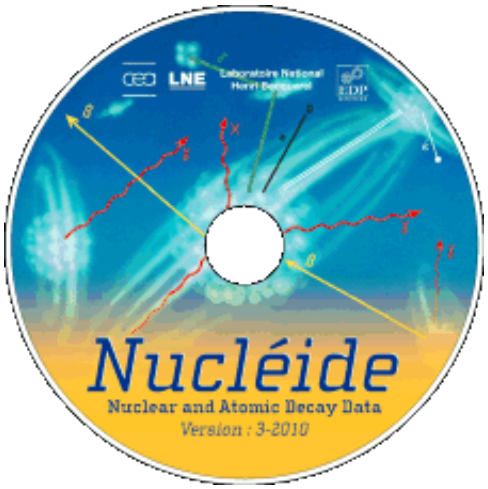
2011 USNDP Meeting, BNL, November 16-18, 2011

U.S. DEPARTMENT OF ENERGY

Mission



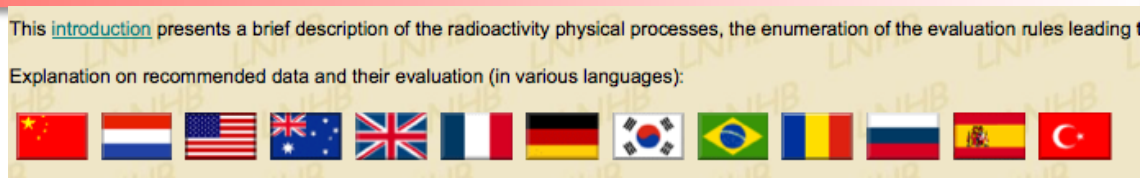
The **Decay Data Evaluation Project** (DDEP) is an international collaboration of scientists from national metrology laboratories (France, Spain & UK), US national laboratories & physics institutions and universities. The main goal is to provide carefully evaluated decay data for radioactive nuclei that are of importance to various applications

www.nucleide.org/DDEP.htm

The Focal Point of the collaboration is LNHB, France

- ✓ custodian of the DDEP database
- ✓ editorial work for various publications

Current Membership



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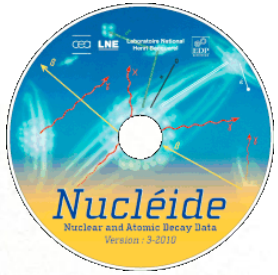
it is an open collaboration – everyone interested to contribute is welcome!

DDEP Publications

www.nucleide.org/Publications/monographies_bipm.htm

- ❑ Evaluations published in BIPM Monographies & W^3
- ✓ 190 nuclides published – Vol. 6 published in 2011
- ✓ some published in the journal Appl. Radiat. & Isotopes
- ❑ IAEA CRP's
- ✓ X- and Gamma-ray calibration standards (**63** nuclides)
- ✓ Updated decay Data Library for Actinides (**85** nuclides)

At the General Meeting of **the *International Committee for Radionuclide Metrology* (*ICRM*)** (Oxford, September 2005) the delegates formally approved the recommendation made by the Nuclear Data Working Group of using the DDEP evaluated decay data in all future nuclear data studies

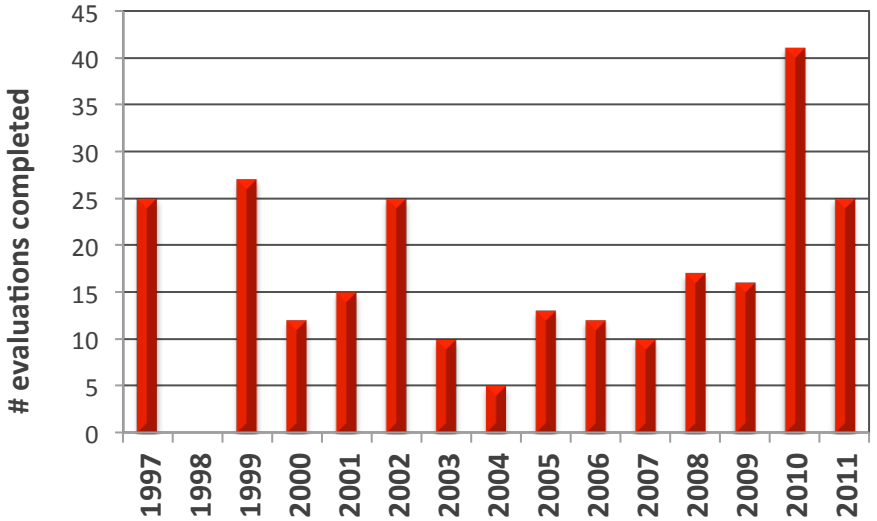


DDEP Evaluations Status

updated: 27th September 2010
latest entry: **Am-242m**
latest updates: **Am-241, Cm-244**
(**170** nuclides in table, sorted by **alphabetical order** / atomic number / mass number /

(Type of updates since last revision: **1** - update in comments only ; **2** - minor update in

Nuclide		Tables	Comments	ENSDF	UpDate	Type
Ac-225	^{225}Ac	table	comments	ensdf	26/08/2009	3
Ac-227	^{227}Ac	table	comments	ensdf	16/02/2009	2
Ac-228	^{228}Ac	table	comments	ensdf	22/01/2010	3
Ag-108	^{108}Ag	table	comments	ensdf	04/09/2006	2
Ag-108m	$^{108}Ag^{m}$	table	comments	ensdf	24/01/2008	1
Ag-110	^{110}Ag	table	comments	ensdf	12/03/2004	1
Ag-110m	$^{110}Ag^{m}$	table	comments	ensdf	24/03/2004	1
Al-26	^{26}Al	table	comments	ensdf	24/07/2003	1



www.nucleide.org/DDEP_WG/DDEPdata.htm

Status of Evaluations

- Number of radionuclides: **322**
  - ✓ Completed: **179** (56 %)
  - ✓ Under review: **3**
  - ✓ Need to be completed: **132** (44%)
  - ✓ Evaluations on W^3: **190**

- IAEA CRP's

✓Updated Decay Data Library for Actinides (**85** nuclides)

Near Future Plans discussed at ICRM11

Evaluations

- ✓ **LNHB:** ^{47}Ca, ^{47}Sc, ^{195m}Au, ^{148,148m}Pm, ^{153}Gd, ^{68}Ge/^{68}Ga, ^{176}Lu
- ✓ **ANL:** ^{67}Cu, ^{188}W, ^{188,188m}Re, ^{178m}Hf, ^{177}Lu, ^{177m}Lu
- ✓ **KRI:** ^{37}Ar + other (emphasis on medical isotopes)
- ✓ **U. Surrey:** ^{76}Br, ^{120,132}I, ^{97m}Tc, ^{106}Rh, ^{126,127}Sb, ^{127,127m}Te, ^{142,142m}Pr, ^{144,144m}Pr, ^{201}Pb, ^{62,62m}Co, ^{62}Cu
- ✓ **NPL:** ^{106}Ru, ^{106}Rh
- ✓ **IFIN:** ^{76}Br, ^{188}W, ^{188}Re
- ✓ **ANU:** ^{186,186m}Re
- ✓ **CNDC:** ^{52}Mn, ^{52}Fe

Measurements

- ✓ **LNHB:** ^{151}Sm, ^{129}I, ^{166m}Ho, ^{211}At*, ^{82}Sr/^{82}Rb*, ^{67}Cu*
- ✓ **ANL:** ^{67}Cu, ^{186}Re (with **ANU**)
- ✓ **IFIN:** ^{18}F, ^{67}Cu, ^{124}I

Near Future Plans – cont.

- **Developments (of interest to USNDP)**
  - ✓ calculation of the shape of beta-spectra with emphasis on forbidden, non-unique transitions (J. Mougeot & M.M. Be, LNHB)
  - ✓ improvements of the atomic radiation data (Auger & X-rays) – collaboration between ANU & ANL (T. Kibedi is leading this effort)
- **Future DDEP meeting & training workshop – to be held in Paris, September or October 2012**
  - ✓ **sustaining evaluator's effort** – some evaluator groups disappeared (PTB, Korea, Brazil) – key retirements unlike to be replaced?
  - ✓ **training new evaluators** – it is a long-lasting process – a good evaluation is not just averaging numbers …
- **Special thanks to USNDP colleagues for helping with the reviews**
  - ✓ E. Browne, N. Nica, B. Singh, A. Sonzogni and J. Tuli