

**PROPOSED  
EURAMET PROJECT**

1. Ref. No.: ( <i>please leave blank</i> )	2. Subject Field: Ionising Radiation	
3. Type of collaboration: Comparison of measurement standards		
4A. Partners: ( <i>institutions</i> ) LNE-LNHB,	4B. CEC funded? No	
5. Participating countries: France,		
6. Title: <b>Standardization and decay data measurements and evaluation of <sup>211</sup>At</b>		
<p>7. Description:</p> <p>Astatine-211 is a short-lived alpha-emitting radionuclide (<math>T_{1/2} = 7.2</math> h) which is intended to be used as a radiopharmaceutical for radio-immunotherapy applications. It is produced in cyclotrons, with possible interfering radioactive impurities like polonium-210. It decays either to bismuth-207 (alpha decay) or polonium-211 (electron capture decay), both finally decaying to lead-207.</p> <p>There is no international traceability established for that radionuclide in terms of activity. It is absent from the BIPM Key Comparison Data Base. And its decay scheme needs to be better known, especially the decay branching ratios, photon and alpha emission intensities.</p> <p>The aim of this project is then</p> <ul style="list-style-type: none"> <li>- to determine with high accuracy decay data such as branching ratios and emission intensities, and half-life.</li> <li>- to establish international traceability for this radionuclide through a comparison in terms of activity,</li> <li>- to issue an updated evaluated decay scheme, based on former published results and on those coming from that project.</li> </ul> <p>Due to the complexity of the exercise, the first step of the project will be to establish a clear protocol of the exercise and of its different steps, agreed by all participants.</p> <p>The project will require an iterative process between activity measurements and decay data determinations. So, at least two activity comparison exercises will be necessary. The first one will be based on the use of a common set of provisional decay data derived from the literature, and will serve as a basis for the comparison of the decay data obtained by the participants. The final one will be based on the use of the new decay data.</p> <p>Due to the relatively short half life and quantities of solution available, probably it will be not possible for all participants to measure the same solutions. Therefore, the activity standards developed by each laboratory should be compared via the calibration of the same transfer instrument, such as a well-type ionization chamber. This could be either the BIPM SIR chamber, if this is compatible with constraints due to half life and activity concentration, or a traveling transfer instrument.</p>		
<p>8. Additional remarks:</p> <p>The interested laboratories should indicate if they will have the radioactive product available, in which quantity and activity concentration.</p> <p>The time schedule of the exercise will depend on that availability.</p>		
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10. Proposer's signature:	11. Date: September 2008	12. Proposed starting date: 2010 ?