

Group 1 National Hub Template (HBM data for Awareness)

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| <b>Introduction:</b>   |   |
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| <ul style="list-style-type: none"><li>Background information on the evolution and status of HBM in your country e.g COPHES/DEMOCOPHES and EU programs.</li></ul> | <p>In Portugal, some HBM studies have been developed in the last 35 years, mainly focused on occupational exposure to chemicals (e.g., heavy metals, tobacco smoke, formaldehyde, firefighters ) or on the general population exposure in hotspot sites (e.g., vicinity of mines and their residues, vicinity of heavy industrial areas or of high traffic zones). More recently, some research has been devoted to the exposure of the general population and particular vulnerable groups (pregnant women, infants) to chemicals (polycyclic aromatic hydrocarbons, mercury, mycotoxins, tobacco smoke and indoor pollution). With the involvement of Portuguese researchers in <a href="#">ESBIO</a> and <a href="#">COPHES/DEMOCOPHES</a> projects, new HBM data was obtained for mother-child pairs in Portugal. These studies, mainly performed at Universities and associated Research Centres and at State Laboratories, with national, EU and international funding, have generated several reports and peer-reviewed publications.</p> <p>The Portuguese participation in HBM4EU led to the creation of the Portuguese National Hub on HBM, composed of the national institutions integrating the project (<a href="#">APA</a>, <a href="#">DGS</a>, <a href="#">FCT</a>, <a href="#">INSA</a>, <a href="#">FMUL</a>, <a href="#">ESTeSL</a>), and helped to implement:</p> <ul style="list-style-type: none"><li>The 1<sup>st</sup> HBM study in a representative sample of the Portuguese adult population in a harmonized way, in order to generate knowledge on exposure to cadmium, PAHS, bisphenols, acrylamides and deoxynivalenol;</li><li>Occupational studies to characterize Portuguese workers' exposure to target chemicals (hexavalent chromium and E-waste related substances), allowing to strengthen the link between occupational health and the industry sector and capacity building (Portuguese laboratories and occupational health experts);</li><li>Dissemination activities to raise awareness and engagement of the Portuguese scientific community, industry, professional organisations and citizens on the relevance of the HBM activities</li></ul> |

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|  | <p>and regulatory actions that can be taken to protect human health.</p> <p>The Portuguese participation in HBM4EU and in the future PARC is crucial to generate knowledge and demonstrate the relevance of a national HBM programme to support health and environment policies in line with the EU.</p>   |
| <p><b>Main text - Results and Discussion</b><br/> <b>ENSURE YOUR NARRATIVES ARE REFERENCED AS FAR AS POSSIBLE</b></p>  |  |
| <ul style="list-style-type: none"> <li>• Description of issue(s) which have resulted in the raising of awareness.</li> <li>• Include brief description of sample population, substances of concern and whether local/regional/national.</li> <li>• Give example of cases and specific studies</li> </ul> | <p>The Portuguese National Hub on HBM has implemented the following dissemination activities, in order to raise awareness in what concerns the risks arising from human exposure to chemicals:</p> <ul style="list-style-type: none"> <li>• Three <u>scientific meetings</u> on Human Biomonitoring - the Workshops on Human Biomonitoring in Portugal (HBM-PT) - pioneer meetings in this area at national level: <ul style="list-style-type: none"> <li>- <a href="#">1<sup>st</sup> HBM-PT</a> (“Bridging Chemical Exposure to Human Health”), Lisbon, 11 May 2018.</li> <li>- <a href="#">2<sup>nd</sup> HBM-PT</a> (“HBM: assessing exposure for a healthier future in Portugal”), Lisbon, 25 October 2019, with media cover.</li> <li>- <a href="#">3<sup>rd</sup> HBM-PT</a> (“Risk assessment”), Online edition, 18 November 2020.</li> </ul> </li> </ul> <p>The meetings promoted the exchange of knowledge and networking possibilities among the attendees - mostly scientists, but also, at a lower level, other stakeholders (students, representatives from industry, trade unions, regulatory organisations, governmental organisations and international organisations).</p> <ul style="list-style-type: none"> <li>• Organization of a <u>Focus group</u> and a questionnaire with Portuguese citizens (29 May 2019), to better understand public concerns on exposure to chemical substances. This event successfully raised awareness on chemical exposure among the participants (<a href="#">Peer-reviewed publication</a> and Additional Deliverable Report AD4.2 - <i>Report of the citizens’ focus groups</i>).</li> <li>• Dissemination of online <u>citizens’ questionnaires</u> on public awareness and concerns regarding chemical exposure and Human Biomonitoring - the response rate of the Portuguese citizens to the last questionnaire was amongst the highest ones - 12,4% of responders, within a universe of 30 countries (Deliverable Report D6.4 - <i>Revised report on national needs, objectives of a long-term HBM4EU inventory of funding mechanisms and recommendations for a</i></li> </ul> |

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|   | <p><i>sustainable HBM initiative in Europe and its organization)</i></p> <ul style="list-style-type: none"> <li>• Media appearance: <ul style="list-style-type: none"> <li>- Participation in a <a href="#">TV programme on pollution and impact of exposure to chemicals</a>, which included an interview on the Portuguese participation on the HBM4EU aligned studies (Canal Saúde+ “Carbono Zero”, July 2019).</li> <li>- Participation in a <a href="#">TV programme on human biomonitoring including a report on the 2nd Workshop on Human Biomonitoring</a> (Canal Saúde+ “Carbono Zero”, October 2019).</li> </ul> </li> <li>• Dissemination of the work on mycotoxins, since PT is the Chemical Group Leader for this substance group in HBM4EU, in several national and international conferences. At the national level, focus for the <a href="#">Forum of National Governmental Laboratories</a>, with the presence of several Ministers and the President of the Portuguese Republic (Lisbon, 25 October 2021).</li> </ul> |
| <ul style="list-style-type: none"> <li>• Description of HBM programme if it exists e.g. implementation of a HBM module into HES or relevant other activities funded by the government.</li> </ul>   | <p>There is no HBM programme in Portugal.</p> <p>The Portuguese public funding agency (FCT) supports science, technology and innovation in all scientific domains, including in the HBM area. Thus, some HBM projects have been funded by FCT or by other institutions but currently there is no government funding to implement and perform a HBM programme. The National Hub, involving several Ministries, has been trying to demonstrate the usefulness and need of a HBM programme and intends to continue this effort within PARC.</p> <p>The activities described above have been developed by the Portuguese National Hub mostly on an in kind basis.</p>  |
| <ul style="list-style-type: none"> <li>• Describe which ministries (Environment, Health etc.)/policy makers and stakeholders involved/steering/financing the HBM programme.</li> <li>• Give examples - specific chemicals or outcomes.</li> </ul> | <p>The Portuguese National Hub on HBM developed a protocol at institutional level, involving institutions under the national Ministries of Health, Environment and Science.</p> <p>This is paving the way for the creation and development of a national Platform on HBM, where it could be ensured the influence of relevant national research institutions, regulators, industry and other Portuguese stakeholders, as well as new possibilities of funding.</p>   |
| <ul style="list-style-type: none"> <li>• Steps/processes needed or used to get the attention of policy makers.</li> </ul>   | <ul style="list-style-type: none"> <li>• Proceeding further the HBM dissemination activities, with better communication tools, in order to involve the civil society;</li> <li>• Developing research, infrastructures and capacity building;</li> <li>• Extending the national laboratory network;</li> </ul>  |

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|   | <ul style="list-style-type: none"> <li>• Establishing more partnerships with national bodies.</li> <li>• Need to allocate national funding to the HBM activities in Portugal.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Describe barriers e.g. funding; challenges e.g. participant recruitment; opportunities e.g. enhancing cross government working and linking of env data with exposure measurements currently at play in your country with regards to HBM.</li> <li>• Have any of these barriers been addressed by HBM4EU? If yes - describe.</li> </ul> | <ul style="list-style-type: none"> <li>• There are no dedicated financial resources to HBM activities.</li> <li>• There is limited awareness in the general population and policy makers about the possibilities given by the HBM. Therefore, a wider and stronger national representativeness at the National Hub is needed. Reaching policy makers is one of the major challenges. Efforts were made to promote attendance of policy makers at the Workshops on HBM organized by the Portuguese National Hub (see above), but with no success. Other Stakeholders (chemical industry, industrial associations, trade unions, etc.) were also invited to these meetings, but attendance was generally low.</li> <li>• The analytical capacity, although existent in Portugal, is dispersed in Universities, Research Centres and Government laboratories and there are difficulties in inter-institutional and inter-sectorial collaboration.</li> <li>• The fact that no HBM4EU budget was planned for National Hub activities affects its dynamics and capacity to organize more/wider initiatives to engage stakeholders. However, the involvement of Portugal in HBM4EU and the in kind efforts of the Portuguese National Hub members has been promoting activities to overcome these difficulties.</li> <li>• Despite the efforts to disseminate the studies and their results to the general public and to some target groups, greater efforts are needed to raise awareness among citizens and policy makers about the hazards arising from human exposure to chemicals and the benefits of characterizing such exposure through a HBM programme.</li> </ul> |
| <ul style="list-style-type: none"> <li>• Other players who would be beneficial in raising awareness and working together to promote HBM</li> </ul>  | <p>Chemical industry, industrial associations, citizens' associations, trade unions, NGOs.</p>  |
| <p><b>Future plans -</b></p> <ul style="list-style-type: none"> <li>• Are there plans to use HBM data in the future for policy or awareness - give clear examples. Will the data from HBM4EU be used?</li> </ul>  | <ul style="list-style-type: none"> <li>• Develop better communication tools, in order to: <ul style="list-style-type: none"> <li>- Reach potential partners and achieve a real national HBM-Platform, promoting the dialogue among those who have analytical capability and scientists, risk assessors, risk managers, citizens and policy makers, establishing a network of HBM infrastructures and increasing the Science to Policy Interface on specific exposure concerns (e.g. exposure of general population to MeHg via fish consumption). An advisory board including several</li> </ul> </li> </ul>  |

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|  | <p>stakeholders (e.g. NGO, industry, citizens' associations, etc.) is under development.</p> <ul style="list-style-type: none"><li>- Improve the communication of the HBM results to the participating volunteers/workers.</li><li>• Adapt the existing analytical capability for different environmental domains with bridging public health and clinical samples to HBM.</li><li>• Use of data from IPCHEM and HBM4EU, including the ones generated with Portuguese samples, so that this can be an instrument of dissemination and useful for risk assessors and to define priorities at different sectors (environment, health, agricultural...).</li><li>• Use of data from Portuguese registries on mortality, hospital admissions, medication sales and environmental data. The National institute of Health has access to data from the National Health Interview Survey and the National Health Service Portal.</li><li>• Include HBM in the regulatory chemical risk assessment.</li><li>• Allocate National funds to allow the development of research, infrastructures and capacity building.</li><li>• PARC will be a driving force for the HBM activities in Portugal.</li></ul> |
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