Discussion points for telecon on Rhenium 15th June 2009

1. Work on rhenium to date:
    a. Physico-chemistry endpoints:
        i. Water solubility (see Table 1)
        ii. Other – some general reviews are available which may contain relevant information. These will be reviewed in Phase II of the REACH project, which is currently ongoing.
    b. Ecotoxicology endpoints: Only one short-term aquatic invertebrate test study was found (for the amphipod *Hyalella azteca*). However, there appear to be no algal or fish studies, which are REACH Annex VII and VIII requirements.
    c. Mammalian toxicology endpoints. There are data on acute oral toxicity and skin irritation which all relate to proprietary tests conducted with ammonium perrhenate. Some general reviews of rhenium toxicity were also identified in Phase I of the REACH project and these may contain further information which will be useful for data requirements under REACH. These will be reviewed in Phase II of the REACH project, which is currently ongoing.

2. Paper by Dr Mitchell at Reading University: This paper summarises available information on the water solubility of several rhenium substances (it does not indicate whether or not the studies should be considered as reliable for registration under REACH). It also usefully summarises information on the speciation of rhenium in water. It appears that much of the available information has been collected at relatively high concentrations, which may not necessarily be directly relevant to potential exposure levels or toxicity reference values. The paper recommends a read-across approach. However, there may be a need to consider additional categories, for example where counter-ions may exert toxic effects, or where there are uncertainties surrounding dissolution behaviour.

3. Recommended Intelligent Testing Strategy for rhenium:
    a. Obtain reliable water solubility data for all rhenium substances, as a priority
    b. Consider availability and speciation of rhenium compounds in each provisional category (transformation/dissolution testing may be necessary for any sparingly soluble compounds, and speciation analysis of the solutions formed may be advantageous for confirming that substances have been placed in the correct categories).
    c. Physicochemical test strategy: We will also require information on Granulometry of the substances that exist and are marketed in granular/powder or solid form. Also in order to do a proper classification and labelling we need information on flammability.
    d. Ecotoxicity test strategy: Testing of the worst case substance in each category, or testing end-members of categories should provide a useful basis for read-across approaches. Ammonium perrhenate may need to be considered separately due to the potential toxicity of the counter ion. Additionally, if rhenium metal cannot be demonstrated to produce Re(VII)

species then an alternative approach may need to be considered for this substance.

e. Mammalian toxicity test strategy: There is very limited information for the mammalian endpoints to date and we may need to consider conducting some of the Annex VII *in vitro* tests.
f. It may be possible to make a case for exposure-based waiving for some tests due to the low tonnages, although this would depend upon the uses to which the substances are put and adequate information being available regarding uses, exposure and emissions for all of the relevant use patterns and life cycle stages.

4. Plan for continuation of work on rhenium: Members of the PMC are requested to search for any proprietary data they may have for rhenium. In the absence of this it is difficult to carry out a proper data gap analysis and develop an appropriate ITS until the tests described above have been performed.

5. Options for fast-tracking rhenium work. Rhenium work could be fast-tracked if necessary. However, unless there are strong commercial reasons to submit registration dossiers in 2010, it makes more regulatory and technical sense to prepare dossiers on rhenium substances for later submission (2018 in the case of these rhenium substances, which all have tonnage bands <100 tonnes pa). The advantage of this is that the rhenium working group can learn from earlier submissions for other substance groups, which will make submission more efficient and effective and, as a result of this, is likely to cost less.

6. Other issues. Adam Peters will be available for the conference call with members of the rhenium working group on 15th June 2009. Staff from wca environment and bibra are happy to attend a future meeting of the rhenium working group to discuss the outcome of the full Phase II assessment and plan a cost-effective ITS.

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wca environment 12 June 2009

Table 1. Information on rhenium water solubility

Category	Name	Tonnage band	CAS number	Water solubility	CRC* entry
Re (0)	Rhenium	1-10	7440-15-5	No data	Insoluble
Re (7)	Perrhenic acid	1-10	13768-11-1	No data	Very soluble
	Dirhenium heptaoxide	1-10	1314-68-7	No data	Soluble
	Sodium rhenate	1-10	13472-33-8	No data	
	Calcium perrhenate	1-10	13768-54-2	No data	
	Dirhenium heptasulphide	1-10	12038-67-4	No data	Insoluble
Re (7A)	Ammonium perrhenate	10-100	13598-65-7	Data available	

***The Chemical Rubber Company -** Handbook of Chemistry and Physics first time published in 1913, became the standard reference for chemists and physicists worldwide. Updated nearly 90 times, about 2500-page volume.