



## Guide Principles for Safe, Sustainable Uses of Phosphogypsum

Drafted by the International Phosphogypsum Working Group (IPGWG), November 2009.  
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These Principles are developed against the background of the IAEA Fundamental Safety Principles, IAEA Safety Standards Series, No. SF-1, Vienna, (2006).

- PG is a co-product with phosphoric acid of the so-called “wet process” manufacture of phosphatic fertilisers and related products, such as animal feeds
- As a co-product, or residue, PG is not a *de facto* “waste”, as currently defined in some jurisdictions, nor does it meet the legal definition of waste in that it has a history of safe use, for example in agriculture, dating back over seventy years and for the future has both foreseen and foreseeable uses
- Based on known published and peer-reviewed evidence, PG has a wide variety of safe, beneficial options for use, assuming that the instructions for use and known good practices are correctly followed.

Nevertheless:

- Fundamental commitment is made going forward to the creation, dissemination and use of best available practices (BAPs) and technologies (BATs) in the execution of projects using PG, leading in due course as appropriate to formalisation in (ISO) standards
- Use of PG in construction is need- not issue-driven; i.e. PG warrants use in a given project or setting based on the traditional criteria of
  - Technical merit
  - Cost
  - Returned benefit
- Consideration of PG as an alternate or substitute material is based on policies of resource conservation and sustainability, with particular emphasis on the need for conservation, recovery and reuse of all materials, such as gypsum and lime, and equilibrium between production and consumption of critical resources
- Evaluation of any given use of PG is, ideally, to be based on “Triple Bottom Line” (TBL)<sup>[i]</sup> measures of Benefit and Value, which are indicators of potential return on investment from using PG according to:
  - financial/ economic
  - social
  - environmentalbenefits returned

- Following a TBL approach brings with it the need for stakeholder participation in decision-making and transparency in monitoring and oversight
- Adoption of peer-review and independent assessment of project goals and outcomes is highly advisable, at least until benchmarks and standards are established
- There is general recognition of a need for coherent and consistent global standards in overseeing or regulating essential industries, such as the phosphate industry leading to a practice of “constructive regulation” as supported by such bodies as IAEA, ICRP, IRPA, WHO etc...) [\[ii\]](#)
- It is understood that such coherence and consistency must derive from evidence-based policy and best practices
- In that spirit, the IPGWG is committed to the creation of a freely available, criterion-referenced monitoring and resource centre, focused on outcomes beneficial to both direct and indirect stakeholders
- Among the tasks for such a resource centre will be promotion of good practices and associated research dedicated to reducing or eliminating any harmful impact on occupational, public or environmental health and safety, for example from radionuclides or heavy metals, and the assessment of the potential contribution to be made by PG use to sustainability goals, such as virgin resource conservation, and reducing both carbon footprint and GHG emissions
- The principle of “regionality” necessarily applies in mapping global standards to local conditions in that the specific use of PG will vary according to the properties of the PG produced and according to local needs and priorities. Such use however, should be based on common standards and principles.

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[\[i\]](#) ELKINGTON, J. "Towards the sustainable corporation: Win-win-win business strategies for sustainable development." California Management Review 36, no. 2: 90-100, (1994).

[\[ii\]](#) HILTON, J., BIRKY, B., JOHNSTON, A.E., The “constructive regulation” of phosphates and phosphogypsum: A new, evidence-based approach to regulating a NORM industry vital to the global community, Proceedings, IRPA 12, Buenos Aires, (2008)