



An appeal for the integrity of science and public policy



We, scientists and signatories of this appeal assert our concern for the erosion of scientific principles in the purported validation of experimental evidence, which is manifest in arguments disguised as true science. Such arguments are used to simulate and exaggerate hazards and risks that justify official intervention policies in health, safety and environmental issues. This erodes public confidence in science and government, leads to misallocation of public resources, cause massive economic distortions, and strains court adjudications.

Our concern is motivated by the importance of adhering to the self-evident precepts of the scientific method in arriving at defensible conclusions. Those precepts require observational and experimental data that are authentic and of known measurement error; experimental variables that are relevant to the hypotheses being tested; the control of externalities that may confound observations and experimental results; and reproducibility by other performers or counterfactual verification.

Unlike unbiased science, the spurious science of our concern starts off from arbitrary default assumptions that inevitably yield biased and uninterpretable results, unable to quantify or estimate putative human hazards. Similar concerns apply to advocating premature experimental accounts that are not sufficiently tested and controlled. Examples are found in animal, in vitro and in silico tests of presumed risk factors for human cancer and endocrine disturbances, and in many epidemiologic surveys and environmental impact assessments.

We agree that precautionary policies and regulations may be called for in the absence of firm scientific evidence that would permit an assumption of certainty. However, such precautionary regulations and policies should not be imposed as if grounded on objective science, but should result from public debates on wider issues including economic trade-offs between desirable uses and cautious restrictions on exposure. Rather than being truly precautionary, what might be called pseudo-science is a subterfuge to gloss over arbitrary policies and regulations while claiming to be supported by the impartial objectivity of the scientific method. Indeed, on such shaky grounds the lifestyles, choices, and behaviors of nations are directed, substantial segments of national economies are regulated, and unfortunate transgressors face criminal charges, massive fines and detention.

Science is synonymous with factual representations, and only close adherence to the evidentiary standards of the scientific method has allowed the multiple discoveries that sustain current understanding of the world and related technologies. Remarkably,

those standards are not binding in most national and international statutes that discipline the development of public policies and regulations.

Reflecting a tradition of wide administrative discretion, such existing statutes are non-prescriptive on how evidence is to be obtained and considered, at odds with anticipations of clear checks and balances to inform delegated legislative authority. Change seems in order, and we urge legislators to embed the rules of evidence of the scientific method in statutes governing administrative policy and regulations. Such rules would only apply when testable scientific evidence is available – where this is not the case, considerations between precaution and desirable uses would determine policies and regulations.

We believe it is necessary to affirm the reliable and evidence-based power of science to ensure the rational and ethical integrity of public policies and regulations, and of legal proceedings. Not only is science in play, but also those ideals of justice and rationality that sustain free intellects, free persons and free societies.

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