

# The Planetary as Embodied

18 September 2025

Explorations



Pipeline, noticeable as a thin white line, passing through the undulated terrain of Tummalapalle from the Tummalapalle Uranium Mine and Mill to its tailing pond, Andhra Pradesh, India. Photo by Misria Shaik Ali. CC BY-NC 4.0.

by Misria Shaik Ali

Planetary health encompasses the interrelated health of human beings and natural systems. Planetary conceptualities, including that of planetary health, are presumed to require interventions at the scale of global systems as “the global” is frequently taken to proportionately represent the concomitant vastness of “the planetary.” In contrast, traces of planetary harm reside in and emerge from the crevices and bends of undulating locations across the globe. Here, planetary crises are experienced through the localized processes of more-than-human embodiment and its spatio-temporal scales. The scales that the concept of planetary health traverses hence “range from the microbial through to the planetary” and “link beings, environments, and landscapes, from the point of view of

entanglement” in the production of knowledge.<sup>1</sup> As unabated contamination of natural systems is exacerbated, leading to impacts that the monitoring systems in place fail to measure, the experiencing more-than-human body becomes a sensor indicating and providing information about planetary harm. To fully understand the spatio-temporal dimensions of planetary health, we need to look at its emergence from specific locales and the creation of locally embodied planetary sensibilities.



*An agricultural borewell. Photo by Misria Shaik Ali. CC BY-NC 4.0.*

One such location is the Tummalapalle Uranium Mine and Mill (TUMM) in the southwest of the Cuddapah Basin, Andhra Pradesh, India, which is operated by Uranium Corporation of India (UCIL), a Public Sector Undertaking (PSU) of the Indian government’s Department of Atomic Energy. Through mine shafts, UCIL’s TUMM accesses and extracts uranium ore from Proterozoic rock formation, which is about 2.5–1.6 billion years old; the shafts run beneath agricultural farms, some of which are 200 years old. TUMM’s tailing pond is situated in the hollows between two villages, MC Pale and Kottala, and covers one hundred hectares. The tailing pond, the uranium (along with the radioactivity) it holds, and other infrastructure such as borewells thus span a vast spatio-temporal scale, clasp onto the region for India’s uranium production. The pond and technologies of environmental monitoring extend into the villages;

their proper functioning and maintenance ensure that uranium and other chemical pollution remain confined within the facility.

The pond currently holds nine million tonnes of tailings, which include uranium ore, sodium salts, and 17 other chemicals used in the process of alkaline leaching of uranium ore as practiced by TUMM.<sup>2</sup> The state-owned industry TUMM, as per the mandate of the Atomic Energy Regulatory Board (AERB) of India, set up monitoring borewells to observe seepage of the highly alkaline and radioactive tailings from the pond into the groundwater. Environmental Survey Laboratory (ESL) members at TUMM collect water samples from the borewells and send them to the Bhabha Atomic Energy Centre (BARC) in Mumbai, India’s premier nuclear-research facility. However, since 2018, villagers have considered TUMM’s borewell monitoring futile as it failed to sense uranium contamination in the region

shooting up to 690 to 4000 parts per billion (ppb), in contrast to the “safe” standard set by AERB at 60 ppb.<sup>3</sup>

Instead, the farmers’ bodies, engaged in the everyday practice of agriculture, sensed the contamination. Noticing that the water in agricultural borewells had turned white, the farmers tasted it as “it is [their] land, and [they] have to care for it,” and found that it tasted salty. The contaminated water constituted an irregularity in the region’s agricultural activities. Farmers, knowing that the problem extended beyond their individual grounds, worked with the Andhra Pradesh Pollution Control Board (APPCB) to assess the cause of the contamination. The board argued that the contamination of the groundwater might be due to improper lining of the tailing pond, which was “highly alkaline.” They further explained that since the location of monitoring borewells “[is] not correct . . . they are not representing the true nature of ground water.”<sup>4</sup> As per the APPCB, lining the tailing pond with adequate natural and geosynthetic layers, namely sand and bentonite clay as well as polyethylene respectively, ensures that the tailings or waste generated from milling in TUMM is contained within the pond. Such lining is considered to prevent seepage of tailings into the groundwater, which could affect residential and other livelihood activities in the vicinity.

Adequate lining of tailing ponds is defined in both pollution-control stipulations and nuclear-safety standards, while the specific guidelines established by various regulatory organizations might differ. In his response to APPCB, TUMM’s general manager asserted “the effective containment” of tailings “within the” tailing pond as the tailing pond is lined with clay as per the “guidelines” set by the Atomic Energy Regulatory Board (AERB). TUMM argued that following AERB guidelines warranted “low permeability” ( $10^{-9}$  meters per second) and “ensure[d] that the migration [of pollution] is contained.” Owing to clay’s intrinsic property of low permeability, the manager continued, “there is no possibility of percolation.” The lining as an “engineering measure” taken at the time of construction to control seepage and for confinement of tailings, TUMM claimed, testified the company’s “care for environment and social issues.”<sup>5</sup>

Therefore, in the case of TUMM, two forms of care contest to produce knowledge about contamination: technoscientific care and embodied care. As “care” was invoked in the process of knowledge production by both farmers and UCIL,<sup>6</sup> care/neglect and knowledge/ignorance become intricately linked. AERB relied on its engineering measures taken at the time of construction and used them to attest to its care for the environment. However, it had only followed nuclear safety and did not line the tailing pond with bentonite clay and polyethylene sheet as per the pollution guidelines set by APPCB. Based

on UCIL's reasoning and without the representation of the farmers, the National Green Tribunal (NGT) refused to render judgment on a case of which it had taken *suomoto* cognizance. Farmers, on the other hand, relied on the senses of sight and taste embedded in their tradition of embodied care to produce knowledge about contamination. To assess the source of contamination, NGT solely referred to



*An experienced farmer holding degraded soil to demonstrate the leaching effect of contaminated water on soil. Photo by Misria Shaik Ali. CC BY-NC 4.0.*

nuclear-safety guidelines, engineering measures, rather than making use of farmers' embodied knowledge and residents' embodied health ailments. This has led to both ignorance about contamination and the neglect of environmental and health challenges in the region by various authorities.

This neglect is not a result of morally bad industries but rather emerges from the widely held knowledge premise that “safety *necessarily contributes* towards protection” of the environment and health, which is particularly prominent in the nuclear-energy sector.<sup>7</sup> That is, following safety guidelines for lining the tailing pond with clay, owing to its intrinsic properties, warrants low permeability and thus fosters protection. However, technoscientific care in the form of engineering measures does not always lead to environmental-health protection—the latter requires engagement of embodied agencies, which were ignored in the TUMM contamination case and led to the neglect of human and environmental health. As of 2021, several villagers have reported infertility, spontaneous abortions, and dermatitis, among other ailments. Furthermore, the half-life of radionuclide U238, present in TUMM's tailings, is about 4.47 billion years roughly.<sup>8</sup>

The global nuclear sector uses the advancements made in terms of nuclear safety as a reason to support the expansion of nuclear activities around the globe. Meanwhile, uranium mines like the one in Tummalapalle leave planetary traces of radioactive harm—on landscapes and in bodies—with the cause unknown due to a system of reasoning that solely relies on nuclear-safety measures. In the absence of a robust knowledge premise for nuclear regulations and environmental-health surveillance systems that goes beyond safety measures to protect residents and farmers embodying planetary traces, the spatial and temporal scales of planetary harm is sensed and known in particular locales and their embodied environments. This calls for considering planetary health from locations where the nonhuman and human experience the health impacts of today’s multiple ecological crises, suffer from pollution, and produce knowledge about such harm while embodying it.

---

1. Andrés Jaque, Marina Otero Verzier, and Lucia Pietroiusti, eds., *More-than-Human: A Reader* (Het Nieuwe Instituut, 2020), 12. ↩
2. “Show Cause Notice,” 23 March 2018, Andhra Pradesh Pollution Control Board, Notice No. CDP: 70/PCB/ZO-KNL/2017-, accessed via National Alliance of People’s Movement. ↩
3. Letter to M/s. Uranium Corporation of India Limited (A Govt of India Enterprise), 19 April 2018, Andhra Pradesh Pollution Control Board, Lr.No. / APPCB/Zo/KNL/2018-90, accessed via National Alliance of People’s Movement. ↩
4. Letter to M/s. Uranium Corporation of India Limited, Lr. No. / APPCB/Zo/KNL/2018-90. ↩
5. Letter to the Joint Chief Environmental Engineer, 2 April 2018, Andhra Pradesh Pollution Control Board, Ref: UCIL/TMPL/MILL/2018/01, accessed via National Alliance of People’s Movement. ↩
6. Ibid. ↩
7. *IAEA Safety Glossary: Terminology Used in Nuclear Safety and Radiation Protection* (International Atomic Energy Agency, 2007), 150. ↩
8. Uranium-235 (U-235) and Uranium-238 (U-238),” , Radiation Emergencies, U.S. Centers for Disease Control and Prevention, 17 April 2024, <https://www.cdc.gov/radiation-emergencies/hcp/isotopes/uranium-235-238.html>. ↩

. . .

*Planetary health has so far been predominantly studied by natural scientists and medical experts. Over the next few months we will publish a series of essays that*

*illuminate different aspects of the planetary-health concept from a decidedly environmental-humanities perspective. The entries have their origin in the contributions of international scholars who attended the Rachel Carson Center workshop “Imagining Planetary Health, Well-Being, and Habitability,” convened by Lijuan Klassen and Christof Mauch and sponsored by the Volkswagen Foundation.*

• • •

“The Planetary as Embodied” © 2025 by Misria Shaik Ali is licensed under CC BY-ND 4.0.

