

Assignment 6

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Problem 1

(a)

Impact: Disposable cups (especially plastic or lined paper cups) are difficult to fully recycle. High usage contributes to increased landfill burden, marine plastic pollution, and consumption of petroleum resources.

Ethical Consideration: Choosing reusable cups significantly reduces resource waste and pollution, reflecting an individual's responsibility towards sustainable development.

(b)

Impact: Vehicles with low fuel efficiency emit more carbon dioxide (CO_2) and other pollutants, exacerbating global warming and air pollution.

Ethical Consideration: Opting for energy-efficient or electric vehicles, using public transport, or carpooling reduces one's carbon footprint and aligns with the ethical obligation of environmental protection.

(c)

Impact: Beef production involves high greenhouse gas emissions (notably methane), requires substantial water and land resources, and contributes to deforestation and biodiversity loss.

Ethical Consideration: Reducing meat consumption or choosing plant-based alternatives lowers environmental impact, demonstrating care for the global ecosystem.

(d)

Impact: Batteries contain heavy metals (e.g., mercury, lead). Improper disposal pollutes soil and water sources. Proper recycling minimizes toxic substance release and promotes resource recovery.

Ethical Consideration: Taking the initiative to recycle responsibly reflects a proactive attitude towards pollution prevention and a sense of civic duty.

Problem 2

As a party to the Montreal Protocol, China has formulated and implemented an HCFC (Hydrochlorofluorocarbon) phase-out plan, primarily targeting commonly used refrigerants like R-22.

- Phase I (2013–2020): Freeze HCFC production and consumption at the 2009–2010 baseline level and initiate gradual reductions.
- Phase II (2021–2026): Further reduction to 32.5% of the baseline level.
- Phase III (2026–2030): Complete phase-out of HCFCs (except for a small number of essential uses) and full transition to environmentally friendly alternatives (e.g., HFOs, natural refrigerants).

Problem 3

Engineer A, in a written report to be submitted to a public authority, did not include information regarding a threat to a bird species posed by an engineering project.

(a)

- Primary Obligation: Engineers shall "hold paramount the safety, health, and welfare of the public" (NSPE Canon 1).
- Honesty and Transparency: Engineers have a duty to provide "complete, objective, and truthful information" (Canon II.3).
- Conclusion: By failing to disclose the threat to the bird species, Engineer A violated the principles of public interest and the obligation of transparency. Therefore, the action was unethical.

(b)

- Utilitarianism: Withholding information could lead to ecosystem damage, harming public interest in the long run. This does not align with achieving "the greatest good for the greatest number."
- Deontology: Engineers have a professional duty to report all relevant risks. Concealing information breaches the moral duties of honesty and responsibility.
- Virtue Ethics: Honesty and diligence are virtues expected of engineers. Engineer A's action demonstrated a lack of professional integrity and ecological concern.

It was ethically unjustified for Engineer A to omit information about the threat to the bird species from the report. This action violated professional codes of ethics and does not conform to the requirements of mainstream ethical frameworks.