Top Ten BMPs for

Oil & Gas Industry Operators

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1: Reduce Emissions During Drilling and Completions • Use Reduced Emissions Completions (RECs), aka Green Completions, to capture gas produced during well completions that is otherwise vented or flared. Electricity needed.	**2: Reduce Emissions During Production** • Minimize venting and/or use closed loop process where possible during "blow downs." • Convert to low-emitting engines. • Tighten connections and replace packing to minimize leaks and fugitive emissions. • Use and maintain proper hatches, seals, and valves to minimize air emissions. • Reduce emissions of unburned hydrocarbons by routing emissions to flare or combustor or routing dehydrator still emissions to first stage compression. • Lower glycol circulation rate to avoid over-dehydrating.
3: Conserve Water • Utilize on-site water treatment facilities, such as a 3-phase (liquids, condensate, and gas) separator on the flowback fluid. • Use carefully planned well completions.	**4: Less Toxic Materials** • Substitute organic additives, polymers, or biodegradable additives for oil-based mud to reduce toxicity. • Lubricate with mineral oil and lubra-beads instead of diesel oil.
5: Reuse Resources • Recover and reuse weighting materials and drilling fluids. Waste drilling mud can be reused at other locations for spudding or plugging and abandoning operations.	**6: High Efficiency Equipment** • Replace high bleed valves with compressed air, electric valves, or low bleed valves.
7: Monitoring & Maintenance • Implement a Directed Inspection and Maintenance program to identify fugitive gas leaks from leaking compressors, valves, connectors, seals, and open-ended lines using infrared cameras, organic vapor analyzers, soap solutions, and ultrasonic leak detectors; and measurement devices.	**8: Dust & Tailpipe Emissions** • Apply water or chemical treatment, such as magnesium chloride, calcium chloride, lignin sulfonate, or asphalt emulsion. • Restrict vehicle speeds to 10 mph on site. • Cover or reclaim excavated or inactive storage piles after activity ceases.

9: System Design	10: Construction & Reclamation
	• Use diversion dikes, containment diking, and curbing to reduce exposure of storm water runoff to cuttings and other waste storage areas. • Segregate stormwater drainage from liquid storage, loading/unloading facilities and, operations areas from unimpacted areas. • Use sediment traps, swales, and mulching during construction activities to reduce loss of sediment and contamination of runoff. • Accelerate reclamation of site. • Reclaim disturbances.