NEW CHEMICAL SCENARIO FOR DRILLING MUDS

Introduction. Drilling muds containing new chemical additives are used when new oil wells are being drilled. Once the wells begin producing, oil well treatment chemicals are substituted for drilling muds.

Processing/Use. Unload into tank; pump at 3,000 psi down drill string towards drill bit; allow drilling mud to move up annulus between shaft and casing; solids filtration; tank storage; reuse at a total of four drilling sites; disposal

Number of Sites. Calculate by multiplying three-year production volume by 0.0001. This assumes 5 lb of PMN per barrel of drilling mud. See other assumptions.

Total Workers. One worker per site for 160 days/year. An average of 40 days is required to drill one well. See assumptions.

Inhalation Exposure. Generally none. Additives would air strip in the tank and be lost if they had an appreciable vapor pressure.

Dermal Exposure. Incidental exposure upon unloading to one worker per site, 10 days/yr at manufactured concentration. Gloves and closed system mitigate additional exposure. Two additional workers/site might be incidentally exposed at the use concentration for 160 days/yr.

Releases. Assume all of the PMN production volume is disposed of by landfilling. Drilling muds are sometimes incinerated. Alternatively, if the submitter states that PMN is to be used in water-based muds for offshore drilling, assume intermittent ocean discharges of 5000 kg PMN/site.

Assumptions. This scenario assumes the new well is 3,000 to 20,000 feet deep. (The average depth for 1985 was 4,300 feet.) These deep wells use about 50 bbl/day of fairly expensive oil-based drilling muds. This scenario assumes a median use rate of 5 lb PMN per barrel of drilling mud; correct your number of sites and release rate calculations using submitted concentrations.

At one drilling site, three or four workers might be exposed to the PMN for one 40-day drilling attempt. Recall that the PMN is assumed to be used at four sites before disposal. This scenario assumes that the same four workers work at all four sites. This is equivalent to exposure of one worker/site for 160 days/yr.

Other. In a high production year, 80,000 new wells may be drilled in the United States. About one percent (1%) of these are offshore.

There are 42 gallons per barrel. Oil-based muds weigh 7 lb/gal.

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