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NAS CECIL FIELD
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ECOLOGICAL RISK ASSESSMENT POTENTIAL SOURCE OF CONTAMINATION 40 AND POTENTIAL SOURCE OF CONTAMINATION 31 NAS CECIL FIELD FL

1/13/2000

TETRA TECH

1/13/00
CF P31

ECOLOGICAL RISK ASSESSMENT

PSC 40

SETTING:
- Pine flatwoods and mixed hardwood/pine forest
- Pine flatwoods exist east of two ponds that form the eastern extent of PSC 40
- Ponds were originally created for use as wastewater lagoons (0.5 acres each)
- Ponds usually contain standing water, but dry out during periods of drought
- Small ditch located west of the site (no water during sampling activities)

HABITAT:
- Fish and aquatic vegetation are not established (no permanent standing water)
- Animal receptors typical of those in forested habitat
- Aquatic invertebrates and amphibians in ponds and stream when water is present

EXPOSURE:
- Organisms serves as prey items for wading birds, waterfowl and other wildlife

OBJECTIVE:
- Determine if exposure to contaminants in surface water/sediment result in declines in ecological receptor populations

RESULTS:

Metals
- Metals in surface water exceeded ESVs, but were less than hi-cut values.
- Maximum copper and lead concentrations in sediment exceeded ESVs (one sample), but HQs were low (Cu HQ = 1.7; Pb HQ = 1.8)
- Maximum copper concentration in sediment was less than NOAA TEL in freshwater sediments and less than ER-L value.
- Maximum lead concentration in sediment slightly exceeded its hi-cut value.
- Conservative food chain modeling conducted by assuming that food concentrations equal to sediment concentrations and animals exclusively foraged at PSC 40
- Food chain HQs were relatively low

Pesticides/PCBs
- PCBs not detected in sediments
- Maximum concentration of aldrin less than ER-L
- Maximum concentration of endosulfan II less than EPA sediment quality benchmark
- Maximum concentrations of dieldrin and endrin aldehyde exceeded ESVs, but were less than all other guidelines
- Food chain HQs for pesticides were less than one

Semivolatiles
- Total PAHs less than PEL, ER-M
- Food chain HQs less than one

VOCs
- 2-butanone only VOC detected—common laboratory contaminant
- VOCs do not accumulate

CONCLUSION:

- Metals HQs relatively low and concentrations less than hi-cut—no further consideration
- Pesticides, semivolatiles and VOCs are at sufficiently low levels that bioaccumulation is unlikely.
- NO POTENTIAL RISKS TO ECOLOGICAL RECEPTORS—NO FURTHER ACTION.

ECOLOGICAL RISK ASSESSMENT

PSC 31

SETTING:
- Man-made drainage ditch that receives runoff from the area southwest of Building 860
- Ditch discharges northward into a small pond
- Surface water directed to PSC 44

HABITAT:
- Ditch and pond provides limited habitat

EXPOSURE:
- Direct contact, incidental ingestion and consumption of contaminated items

OBJECTIVE:
- Determine if exposure to PAHs in surface water/sediment results in declines in ecological receptor populations

RESULTS:
- Maximum concentrations of 13 PAHs > ESVs (in one sample)
- Hazard quotients relatively low with exception of four PAHs
- Results of food chain modeling using maximum detections resulted in only one PAH (acenaphthylene) with an HQ > 1 (1.67 for the raccoon and 1.38 for the bullfrog).
- Results of food chain modeling using average concentrations resulted in HQ < 1.
- Raccoon has large home range, but HQs were calculated assuming their exposure is exclusive to PSC 31.

CONCLUSION:
- PAHs not expected to significantly bioaccumulate
- PAHs only elevated in one sample, with lower levels in samples collected 15 feet away.
- Pond and associated drainage ditch are of limited value.
- NO POTENTIAL RISKS TO ECOLOGICAL RECEPTORS—NO FURTHER ACTION.