

Fig. 1. GC-FID chromatograms of PHC F2, F3 (F3a and F3b) and F4 and pie graphs of F3a and F3b percentage distributions in fresh whole Federated crude oil, spiked peat and non-spiked peat. ¹o-Terphenyl surrogate. (A) Fresh crude. (B) Peat spiked with fresh whole Federated crude oil – nominal F3 concentration of 10,000 mg/kg. (C) Clean peat.

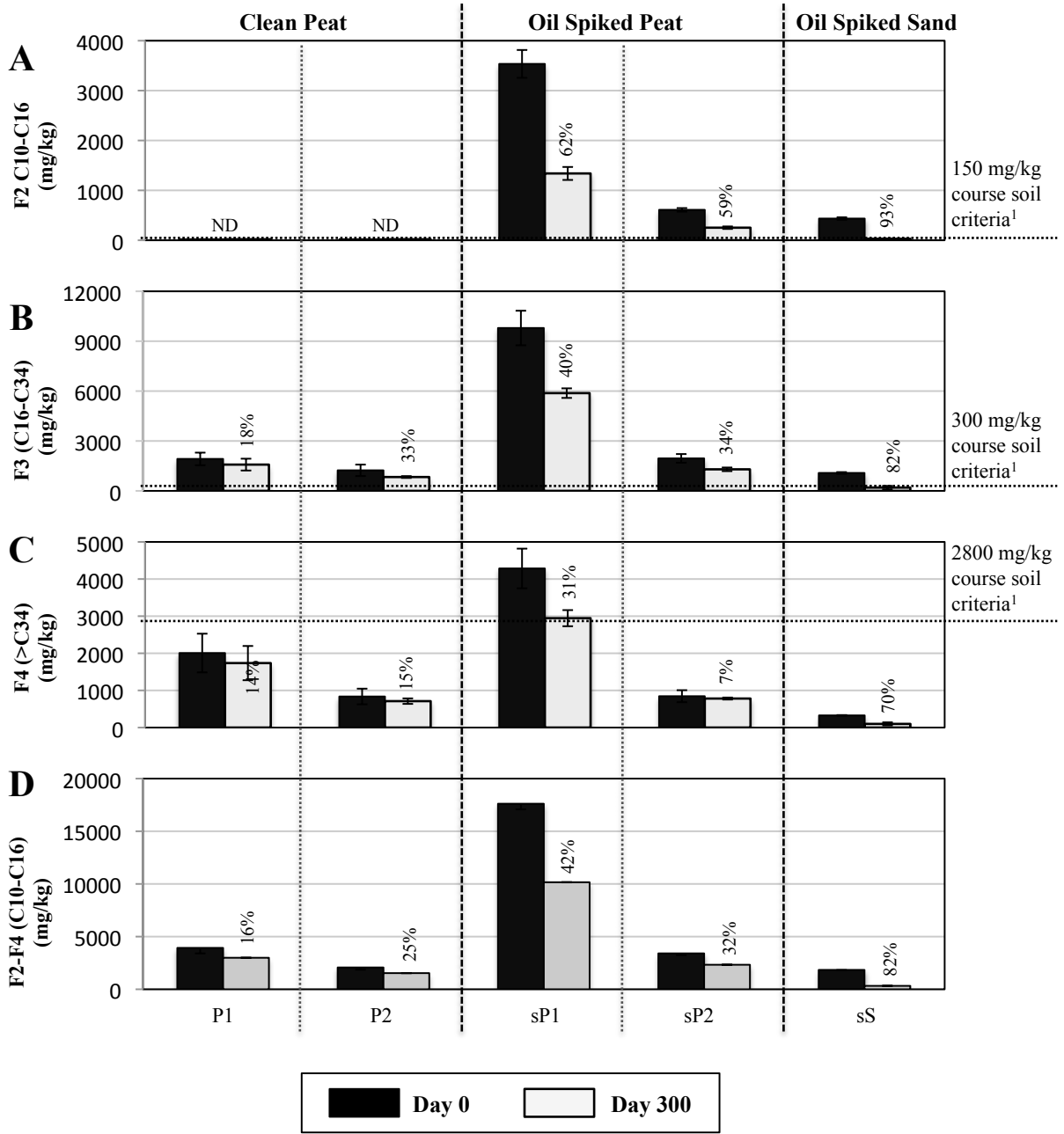


Fig. 2. CCME CWS PHC concentrations (mean \pm SD, n=3) for F2 (A), F3 (B), F4 (C) and F2-F4 (D) in clean and crude oil spiked soils on Days 0 and 300. Number above bar represents percentage decrease of mean concentration on Day 300. ¹CWS Standards for PHC in Soil, Tier 1 course surface soil criteria for agricultural/residential/parkland land uses in potable groundwater conditions [9]. ND - non-detectable concentration; P1 - clean processed peat; P2 - clean natural peat; sP1 - processed peat spiked with 19,608 mg/kg F2-F4 crude oil; sP2 - natural peat spiked with 2,942 mg/kg F2-F4 crude oil; sS - sand spiked with 2,942 mg/kg F2-F4 crude oil.

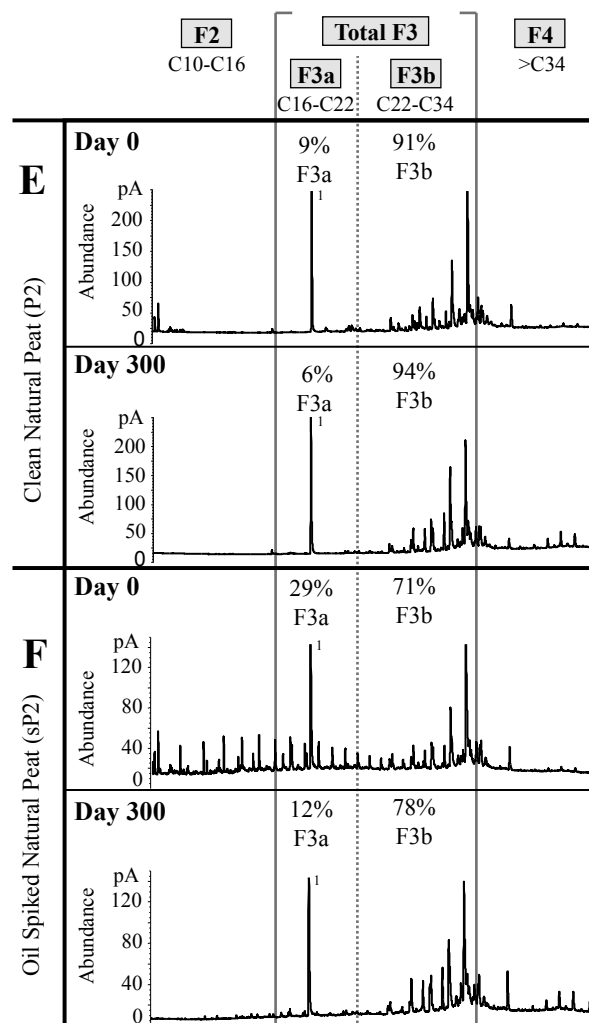
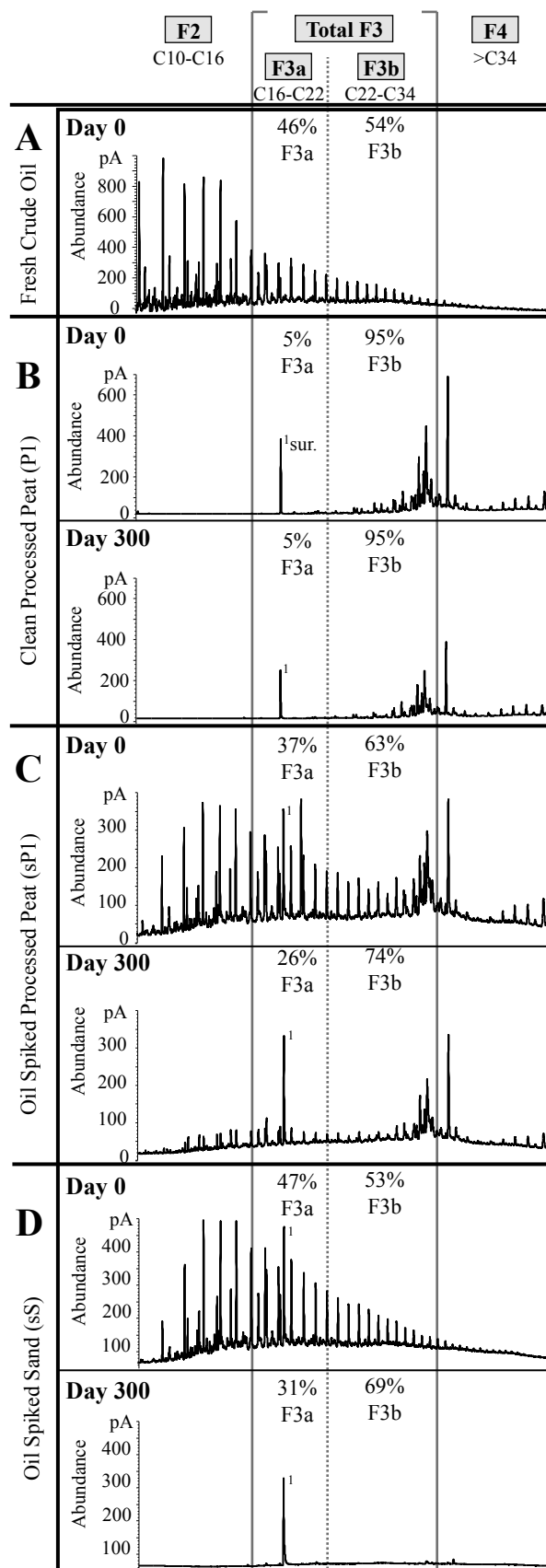


Fig. 3. GCFID chromatograms and F3a and F3b percentages. ¹⁰o-Terphenyl surrogate. (A) Fresh whole Federated crude oil. (B) P1 – clean processed peat. (C) sP1 – processed peat spiked with 19,608 mg/kg F2-F4 crude oil. (D) sS sand spiked with 2,942 mg/kg F2-F4 crude oil. (E) P2 – clean natural peat. (F) sP2 – natural peat spiked with 2,942 mg/kg F2-F4 crude oil. A chromatogram produced by direct injection; B, C, D, E, and F produced by CWS PHC Soil extraction and analysis method [7]. Panels B to F represent one of three replicate samples analyzed for each group.

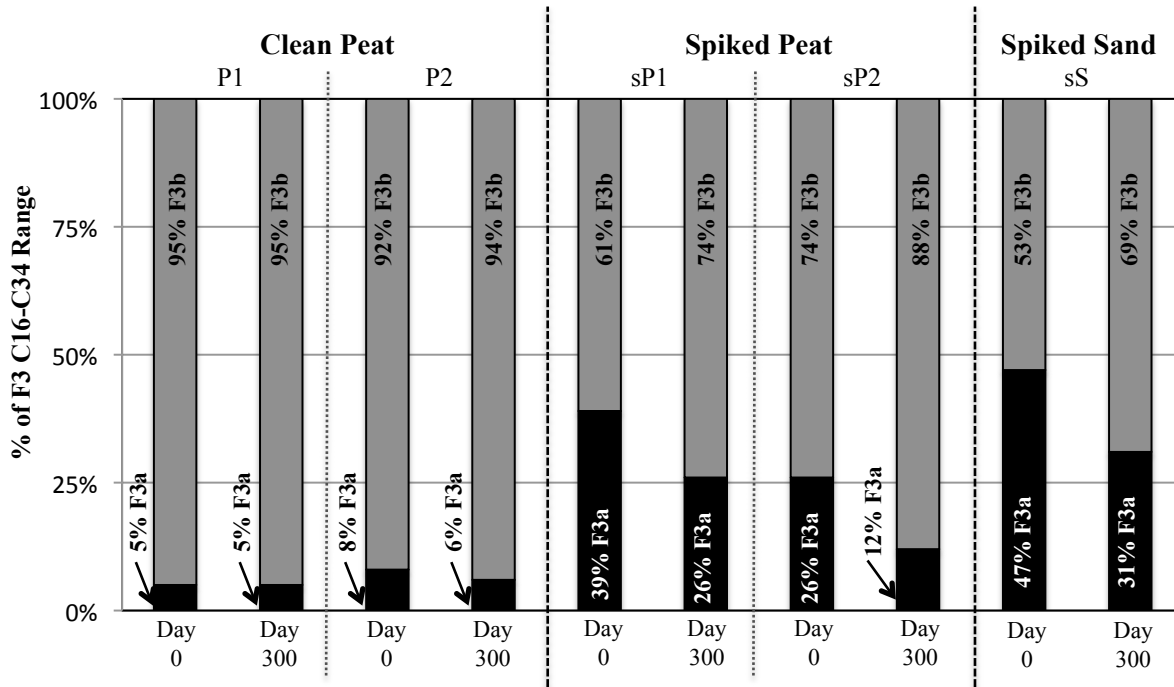


Fig. 4. F3a (C16-C22) and F3b (C22-C34) percentage distributions of F3 (C16-C34) range on Days 0 and 300 (mean, n=3). P1- clean processed peat; P2 - clean natural peat; sP1 - processed peat spiked with 19,608 mg/kg F2-F4 crude oil; sP2 - natural peat spiked with 2,942 mg/kg F2-F4 crude oil; sS - sand spiked with 2,942 mg/kg F2-F4 crude oil.

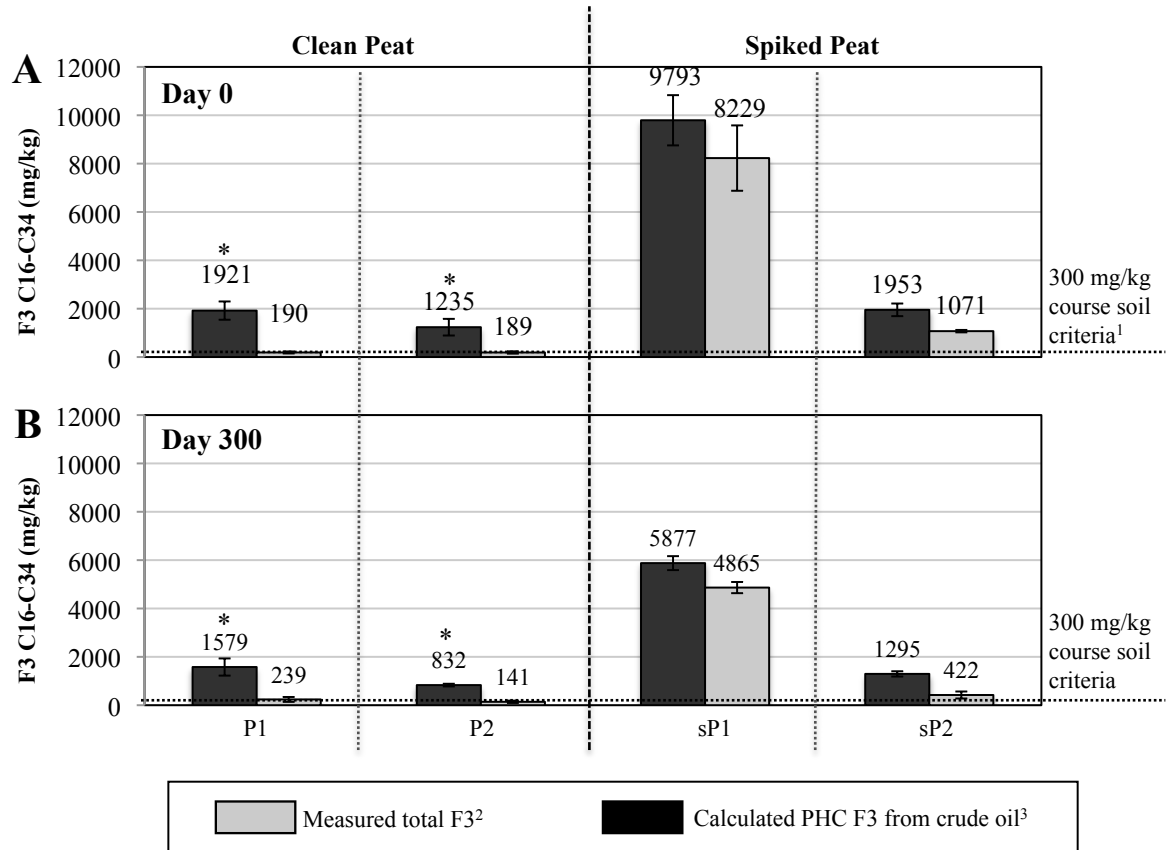


Fig. 5. Mean \pm SD (n=3) of measured total F3 and calculated PHC F3 concentrations in clean and crude oil spiked soil on (A) Day 0 and (B) 300. ¹CCME Canada Wide Standard for PHC in Soil, Tier 1 course surface soil criteria for agricultural/residential/parkland land uses in potable groundwater conditions [9]. ²Total F3 measured by CCME CWS PHC method [7]. ³BOC-adjusted PHC F3 concentration from crude oil calculated by Equation 1. *Asterisk indicates concentrations that did not exceed the F3 criterion. P1 - clean commercial peat; P2 - clean natural peat; sP1 - commercial peat spiked with 19,608 mg/kg F2-F4 crude oil; sP2 - natural peat spiked with 2,942 mg/kg F2-F4 crude oil; sS - sand spiked with 2,942 mg/kg F2-F4 crude oil.

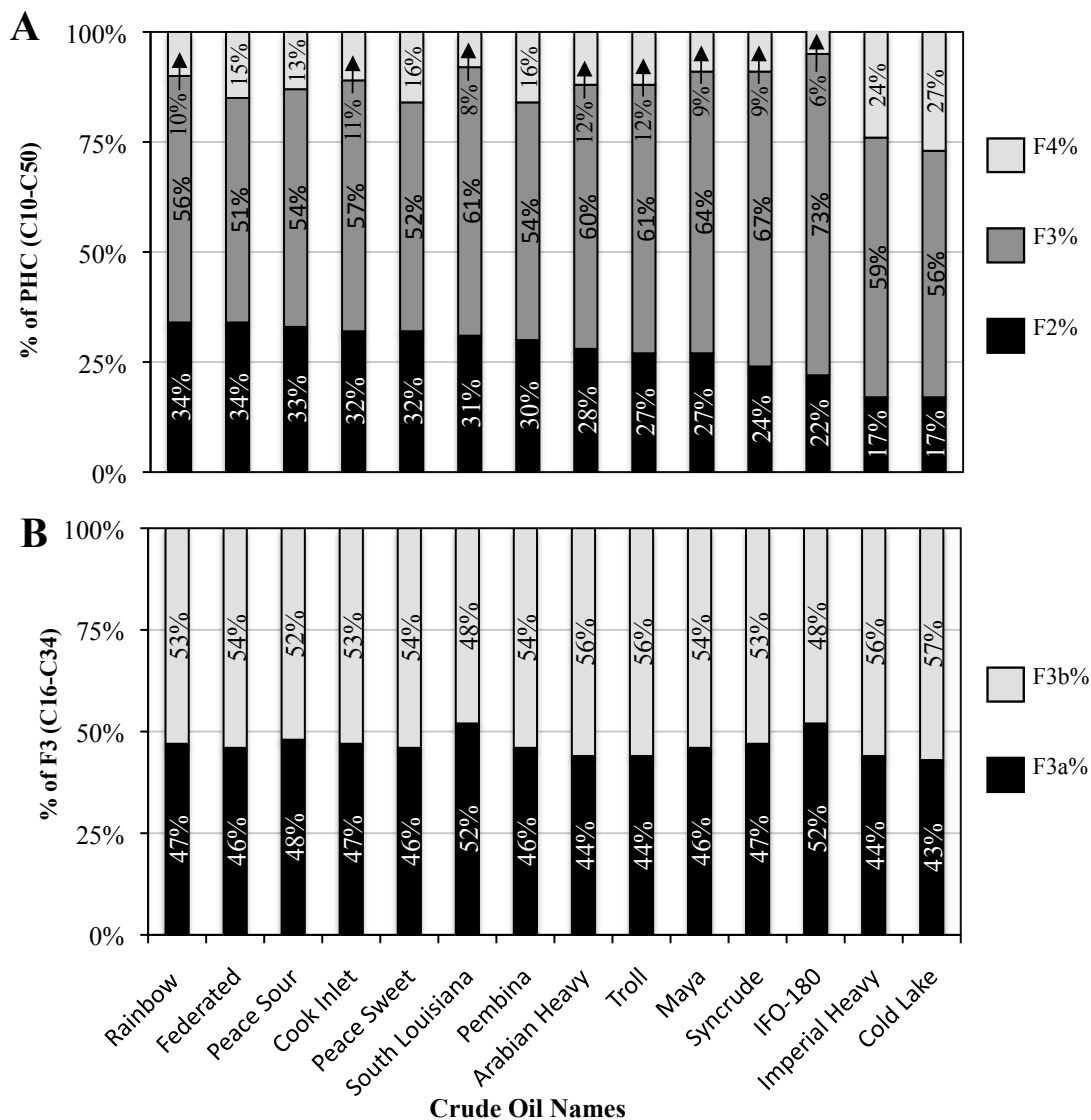


Fig. 6. PHC carbon range distributions in light (Rainbow) to heavy (Cold Lake) fresh crude oils. (A) F2 (C10-C16), F3 (C16-C34) and F4 (>C34) percentages of CWS PHC range. (B) F3a (C16-C22) and F3b (C22-C34) percentages of F3 (C16-C34).