

## Supporting Information

**General Chemistry.**  $^1\text{H}$  NMR spectra were recorded on a Varian XL-300 spectrometer. Chemical shifts for  $^1\text{H}$  NMR spectra are reported (in parts per million) relative to internal tetramethylsilane ( $\text{Me}_4\text{Si}$ ,  $\delta = 0.00$  ppm) with  $\text{CDCl}_3$  as solvent.  $^{13}\text{C}$  NMR spectra were recorded at 75 MHz. Chemical shifts for  $^{13}\text{C}$  NMR spectra are reported (in parts per million) relative to  $\text{CDCl}_3$  ( $\delta = 77.0$  ppm) or  $\text{C}_6\text{D}_6$  ( $\delta = 128.5$  ppm).  $^{31}\text{P}$  NMR spectra were recorded at 121 MHz, and chemical shifts reported (in parts per million) relative to external 85% phosphoric acid ( $\delta = 0.0$  ppm). Radial chromatography was carried out with a Harrison Associates Chromatotron using 1, 2, or 4 mm layers of silica gel 60  $\text{PF}_{254}$  containing gypsum (E. Merck). Silica gel (200-300 mesh, Natland International Corporation) was used for flash chromatography. Ethyl acetate/hexanes mixtures were used as the eluent for chromatographic purifications. TLC plates were visualized by immersion in anisaldehyde stain (by volume: 93% ethanol, 3.5% sulfuric acid, 1% acetic acid, and 2.5% anisaldehyde) followed by heating. Organic solutions of products were dried over  $\text{MgSO}_4$ . Reagents were used as received. Reagent grade toluene was used as the solvent throughout this study, and was not dried. **CAUTION!** Tetramethyl orthosilicate ( $\text{MeO})_4\text{Si}$  may cause blindness. Wear appropriate protection.

**Selective Esterification: Competition Experiment.** A mixture of phenyl phosphinic acid (0.709 g, 5 mmol), phenyl phosphonic acid (0.792 g, 5 mmol), diphenyl phosphinic acid (1.089 g, 5 mmol), and  $(\text{EtO})_4\text{Si}$  (1.010 g, 4.9 mmol) in toluene (45 mL) was refluxed under  $\text{N}_2$ . The white suspension transiently became homogeneous, then milky. After 24 h, the milky reaction mixture was analyzed by  $^{31}\text{P}$ -NMR, and the only detectable new compound formed was ethyl phenylphosphinate (88%,  $\delta 22.8$ ,  $J_{\text{PH}} = 563$  Hz). The reaction mixture was concentrated in vacuo, and the resulting white residue was partitioned between  $\text{EtOAc}$  and aq.  $\text{NaHCO}_3$ . The organic layer was washed with aq.  $\text{NaHCO}_3$  (1 X), and brine (2 x). Drying over  $\text{MgSO}_4$  and concentration afforded a clear, slightly yellow oil (0.633 g). This oil was dissolved in toluene, and  $^{31}\text{P}$ -NMR analysis showed ethyl phenylphosphinate ( $\delta 22.3$ ,  $J_{\text{PH}} = 562$  Hz) as the only product. ( $^1\text{H}$  &  $^{13}\text{C}$  NMR spectra in  $\text{CDCl}_3$  unambiguously confirmed this assignment.)

**Ethyl phenylphosphinate.** References: (a) Liu, L.; Li, G.; Huang, M. *Phosphorus, Sulfur, and Silicon* **1992**, 69, 1; (b) Dahn, H.; Toan, V. V.; Ung-Truong, M. N. *Magn. Reson. Chem.* **1992**, 30, 1089.  $^{31}\text{P}$  NMR (toluene)  $\delta 23.1$ .

**Methyl phenylphosphinate.** References: (a) Liu, L.; Li, G.; Huang, M. *Phosphorus, Sulfur, and Silicon* **1992**, 69, 1; (b) Dahn, H.; Toan, V. V.; Ung-Truong, M. N. *Magn. Reson. Chem.* **1992**, 30, 1089.  $^1\text{H}$  NMR ( $\text{CDCl}_3$ )  $\delta$  7.7-7.9 (m, 2 H), 7.45-7.65 (m, 3 H), 7.56 (d,  $J = 566$  Hz, 1 H); 3.79 (d,  $J = 12$  Hz);  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ )  $\delta$  133.0 (d,  $J_{\text{PCCCC}} = 3$  Hz), 130.7 (d,  $J_{\text{PCCC}} = 12$  Hz), 129.1 (d,  $J_{\text{PC}} = 131$  Hz), 128.5 (d,  $J_{\text{PCC}} = 14$  Hz), 51.9 (d,  $J_{\text{POC}} = 6$  Hz);  $^{31}\text{P}$  NMR ( $\text{CDCl}_3$ )  $\delta 27.6$ .

**Butyl phenylphosphinate.** Reference: Dahn, H.; Toan, V. V.; Ung-Truong, M. N. *Magn. Reson. Chem.* **1992**, 30, 1089.  $^1\text{H}$  NMR ( $\text{CDCl}_3$ )  $\delta$  7.81 (d,  $J = 7$  Hz, 1 H), 7.76 ( $J = 7$  Hz, 1 H), 7.58 (d,  $J = 562$  Hz, 1 H), 7.55-7.6 (m, 1 H), 7.45-7.55 (m, 2 H), 3.95-4.15 (m, 2 H), 1.6-1.8 (m, 2 H), 1.35-1.5 (m, 2 H), 0.92 (t,  $J = 7$  Hz, 3 H);  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ )  $\delta$

132.4 (d,  $J_{\text{PCCCC}} = 3$  Hz), 130.3 (d,  $J_{\text{PCCC}} = 12$  Hz), 129.4 (d,  $J_{\text{PC}} = 132$  Hz), 128.1 (d,  $J_{\text{PCC}} = 14$  Hz), 65.1 (d,  $J_{\text{POC}} = 7$  Hz), 31.8 ( $J_{\text{POCC}} = 6$  Hz), 18.2, 12.9;  $^{31}\text{P}$  NMR (toluene)  $\delta$  22.8.

**Allyl phenylphosphinate.** Reference: Pudovik, A. N.; Pudovik, M. A. *Zh. Obshch. Khim.* **1966**, 36, 1467.  $^1\text{H}$  NMR ( $\text{CDCl}_3$ )  $\delta$  7.83 (d,  $J = 8$  Hz, 1 H), 7.79 (d,  $J = 8$  Hz, 1 H), 7.64 (d,  $J = 566$  Hz, 1 H), 7.4-7.65 (m, 3 H), 5.85-6.1 (m, 2 H), 5.40 (d,  $J = 17$  Hz, 1 H), 5.29 (d,  $J = 10$  Hz, 1 H), 4.45-4.7 (m, 2 H);  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ )  $\delta$  132.6 (d,  $J_{\text{PCCCC}} = 3$  Hz), 131.8 (d,  $J_{\text{POCC}} = 7$  Hz), 130.3 (d,  $J_{\text{PCCC}} = 12$  Hz), 129.0 (d,  $J_{\text{PC}} = 137$  Hz), 128.2 (d,  $J_{\text{PCC}} = 14$  Hz), 118.0, 65.6 (d,  $J_{\text{POC}} = 6$  Hz);  $^{31}\text{P}$  NMR (toluene)  $\delta$  23.8.

**Methyl (4-phenylbutyl) phosphinate.**  $^1\text{H}$  NMR ( $\text{CDCl}_3$ )  $\delta$  7.02 (dt,  $J = 530$ , 2 Hz, 1 H), 7.1-7.3 (m, 5 H), 3.75 (d,  $J = 12$  Hz, 3 H), 2.63 (t,  $J = 7$  Hz, 2 H), 1.55-1.85 (m, 6 H);  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ )  $\delta$  141.4, 128.2, 128.1, 125.7, 52.6 (d,  $J_{\text{POC}} = 7$  Hz), 35.2, 31.9 (d,  $J_{\text{PCC}} = 15$  Hz), 28.2 (d,  $J_{\text{PC}} = 93$  Hz), 20.1 (d,  $J_{\text{PCCC}} = 3$  Hz);  $^{31}\text{P}$  NMR ( $\text{CDCl}_3$ )  $\delta$  42.2.

**Ethyl (4-phenylbutyl) phosphinate.** References: (a) Karanewsky, D. S.; Badia, M. C. *Tetrahedron Lett.* **1986**, 27, 1751; (b) Thottathil, J. K.; Przybyla, C. A.; Moniot, J. *Tetrahedron Lett.* **1984**, 25, 4737.  $^1\text{H}$  NMR ( $\text{CDCl}_3$ )  $\delta$  7.06 (d,  $J = 530$  Hz, 1H), 7.05-7.30 (m, 5 H), 3.9-4.2 (m, 2 H), 2.62 (t,  $J = 7$  Hz, 2 H), 1.55-1.83 (m, 6 H), 1.34 (t,  $J = 7$  Hz, 3 H);  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ )  $\delta$  141.3, 128.0, 125.6, 62.0 (d,  $J_{\text{POC}} = 7$  Hz), 35.1, 31.9 (d,  $J_{\text{PCC}} = 15$  Hz), 28.3 (d,  $J_{\text{PC}} = 94$  Hz), 20.1 (d,  $J_{\text{PCCC}} = 3$  Hz), 16.0 (d,  $J_{\text{POCC}} = 6$  Hz);  $^{31}\text{P}$  NMR (neat)  $\delta$  39.0.

**Butyl (4-phenylbutyl) phosphinate.**  $^1\text{H}$  NMR ( $\text{CDCl}_3$ )  $\delta$  7.06 (d,  $J = 530$  Hz, 1H), 7.1-7.3 (m, 5 H), 3.9-4.15 (m, 2 H), 2.63 (t,  $J = 15$  Hz, 2 H), 1.55-1.85 (m, 8 H), 1.3-1.45 (2 H), 0.94 (t,  $J = 7$  Hz, 3 H);  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ )  $\delta$  141.5, 128.2, 125.7, 65.9 (d,  $J_{\text{POC}} = 7$  Hz), 35.2, 32.2 (d,  $J_{\text{POCC}} = 6$  Hz), 32.0 (d,  $J_{\text{PCC}} = 16$  Hz), 28.5 (d,  $J_{\text{PC}} = 94$  Hz), 20.2 (d,  $J_{\text{PCCC}} = 3$  Hz), 18.6, 13.4.

**Allyl (4-phenylbutyl) phosphinate.**  $^1\text{H}$  NMR ( $\text{CDCl}_3$ )  $\delta$  7.11 (d,  $J = 530$  Hz, 1 H), 7.05-7.35 (m, 5 H), 5.85-6.0 (m, 1 H), 5.37 (d,  $J = 17$  Hz, 1 H), 5.27 (d,  $J = 10$  Hz, 1 H), 4.4-4.65 (m, 2 H), 2.63 (t,  $J = 7$  Hz, 2 H), 1.5-1.9 (m, 6 H);  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ )  $\delta$  141.5, 132.3 (d,  $J_{\text{POCC}} = 6$  Hz), 128.3, 125.8, 118.6, 66.4 (d,  $J_{\text{POC}} = 7$  Hz), 35.3, 32.1 (d,  $J_{\text{PCC}} = 16$  Hz), 28.6 (d,  $J_{\text{PC}} = 93$  Hz), 20.2 (d,  $J_{\text{PCCC}} = 3$  Hz);  $^{31}\text{P}$  NMR ( $\text{CDCl}_3$ )  $\delta$  39.5.

**Allyl octylphosphinate.**  $^1\text{H}$  NMR ( $\text{CDCl}_3$ )  $\delta$  7.12 (d,  $J = 530$  Hz, 1 H), 5.85-6.05 (m, 1 H), 5.39 (d,  $J = 16$  Hz, 1 H), 5.29 (d,  $J = 10$  Hz, 1 H), 4.45-4.7 (m, 2 H), 1.7-1.9 (m, 2 H), 1.5-1.7 (m, 2 H), 1.2-1.5 (s, 10 H), 0.89 (t,  $J = 5$  Hz, 3 H);  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ )  $\delta$  132.4 (d,  $J_{\text{POCC}} = 6$  Hz), 118.5, 66.4 (d,  $J_{\text{POC}} = 7$  Hz), 31.6, 30.2 (d,  $J_{\text{PCC}} = 16$  Hz), 29.6 (d,  $J_{\text{PC}} = 92$  Hz), 28.9 (2), 22.5, 20.5 (d,  $J_{\text{PCCC}} = 8$  Hz), 14.0;  $^{31}\text{P}$  NMR ( $\text{CDCl}_3$ )  $\delta$  40.1.

**Butyl (1-hydroxydecyl)phosphinate (1:1 mixture of diastereoisomers).**

$^1\text{H}$  NMR ( $\text{CDCl}_3$ )  $\delta$  6.95 (d,  $J = 540$  Hz, 1 H), 6.86 (d,  $J = 540$  Hz, 1 H), 4.65 (br, 1 H), 4.50 (br, 1H), 4.0-4.25 (m, 4 H), 3.7-3.9 (m, 2 H), 1.5-1.8 (m, 8 H), 1.2-1.5 (m, 32 H), 0.80-1.0 (m, 12 H);  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ )  $\delta$  69.0 (d,  $J_{\text{PC}} = 110$  Hz), 68.5 (d,  $J_{\text{PC}} = 110$  Hz),

66.9 (d,  $J_{\text{POC}} = 8$  Hz), 66.8 (d,  $J_{\text{POC}} = 8$  Hz), 32.3 (3), 31.8, 29.8 (d,  $J_{\text{PCCC}} = 5$  Hz), 29.5, 29.4, 29.2, 25.3 (d,  $J_{\text{PCC}} = 13$  Hz), 22.6, 18.7, 14.0, 13.5;  $^{31}\text{P}$  NMR ( $\text{CDCl}_3$ )  $\delta$  39.5, 38.0.

**Benzyl phenylphosphinate.** Reference: Karanewsky, D. S.; Badia, M. C. *Tetrahedron Lett.* **1986**, 27, 1751.  $^1\text{H}$  NMR ( $\text{CDCl}_3$ )  $\delta$  7.78 (d,  $J = 7$  Hz, 1 H), 7.73 (d,  $J = 7$  Hz, 1 H), 7.62 (d,  $J = 566$  Hz, 1 H), 7.25-7.6 (m, 8 H), 4.7-5.15 (m, 2 H);  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ )  $\delta$  135.2 (d,  $J_{\text{POCC}} = 7$  Hz), 132.8 (d,  $J_{\text{PCCCC}} = 3$  Hz), 130.6 (d,  $J_{\text{PCCC}} = 12$  Hz), 129.0 (d,  $J_{\text{PC}} = 132$  Hz), 128.4 (d,  $J_{\text{PCC}} = 15$  Hz), 128.35, 128.25, 127.7, 66.9 (d,  $J_{\text{POC}} = 6$  Hz);  $^{31}\text{P}$  NMR ( $\text{CDCl}_3$ )  $\delta$  25.6.

***i*-Propyl phenylphosphinate.** Reference: Houalla, D.; Marty, R.; Wolf, R. Z. *Naturforsch. B Anorg. Chem. Org. Chem. Biochem. Biochem. Biophys. Biol.* **1970**, 25, 451.  $^1\text{H}$  NMR ( $\text{CDCl}_3$ )  $\delta$  7.80 (d,  $J = 7$  Hz, 1 H), 7.76 (d,  $J = 7$  Hz, 1 H), 7.61 (d,  $J = 559$  Hz, 1 H), 7.40-7.65 (m, 3 H), 4.65-4.75 (m, 1 H), 1.41 (d,  $J = 6$  Hz, 3 H), 1.33 (d,  $J = 6$  Hz, 3 H);  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ )  $\delta$  132.3 (d,  $J_{\text{PCCCC}} = 3$  Hz), 130.2 (d,  $J_{\text{PCCC}} = 12$  Hz), 129.3 (d,  $J_{\text{PC}} = 132$  Hz), 128.0 (d,  $J_{\text{PCC}} = 14$  Hz), 70.6 (d,  $J_{\text{POC}} = 6$  Hz), 23.5 (d,  $J_{\text{POCC}} = 5$  Hz), 23.2 (d,  $J_{\text{POCC}} = 4$  Hz);  $^{31}\text{P}$  NMR (toluene)  $\delta$  20.2.

**Phenyl phenylphosphinate.** References: (a) Johnson, M. K. *Biochem. Pharmacol.* **1988**, 37, 4095; Kovaleva, T. V.; Feshchenko, N. G. *Zh. Obshch. Khim.* **1986**, 56, 1777; (b) Yamashita, M., Long, P. T.; Shibata, M. *Carbohydr. Res.* **1980**, 84, 35. Crude containing phenol  $^1\text{H}$  NMR ( $\text{C}_6\text{D}_6$ )  $\delta$  7.59 (d,  $J = 7$  Hz, 1 H), 7.54 (d,  $J = 7$  Hz, 1 H), 7.32 (d,  $J = 587$  Hz, 1 H), 6.75-7.2 (m, 8 H);  $^{13}\text{C}$  NMR ( $\text{C}_6\text{D}_6$ )  $\delta$  151.0 (d,  $J_{\text{POC}} = 9$  Hz), 133.8 (d,  $J_{\text{PCCCC}} = 3$  Hz), 131.2 (d,  $J_{\text{PCCC}} = 12$  Hz), 130.2, 129.8 (d,  $J_{\text{PC}} = 173$  Hz), 129.0 (d,  $J_{\text{PCC}} = 14$  Hz), 125.7, 120.6 (d,  $J_{\text{POCC}} = 5$  Hz);  $^{31}\text{P}$  NMR (toluene)  $\delta$  25.2. An authentic sample prepared from dichlorophenylphosphine and phenol afforded the same NMR data as above.

**Phenyl octylphosphinate.** Crude containing phenol  $^1\text{H}$  NMR ( $\text{C}_6\text{D}_6$ )  $\delta$  6.7-7-7.15 (m, 5 H), 6.86 (d,  $J = 555$  Hz, 1 H), 1.05-1.5 (m, 14 H), 0.86 (t,  $J = 7$  Hz, 3 H);  $^{13}\text{C}$  NMR ( $\text{C}_6\text{D}_6$ )  $\delta$  151.4 (d,  $J_{\text{POC}} = 9$  Hz), 130.3, 125.6, 120.3 (d,  $J_{\text{POCC}} = 5$  Hz), 32.1, 30.4 (d,  $J_{\text{PCC}} = 16$  Hz), 29.3, 29.2, 28.1 (d,  $J_{\text{PC}} = 91$  Hz), 23.0, 20.7 (d,  $J_{\text{PCCC}} = 3$  Hz), 14.3;  $^{31}\text{P}$  NMR (toluene)  $\delta$  39.5.

### **3-Aminopropyltrimethoxysilane hydrochloride (3).**

To a solution of 3-aminopropyl trimethoxysilane (26.9 g, 150 mmol) in toluene (200 ml) was added  $\text{NH}_4\text{Cl}$  (16.0 g, 300 mmol) at room temperature, under nitrogen, and with vigorous stirring. The mixture refluxed for 48 hours. Filtration of the hot suspension removed excess  $\text{NH}_4\text{Cl}$ , and the filtrate was concentrated in vacuo to afford 3 as a white powder (92% crude yield). This material was used in the esterification reaction, without further purification.  $^1\text{H}$  NMR ( $\text{CDCl}_3$ )  $\delta$  7.85 (br, 3 H), 3.58 (s, 9 H), 3.03 (t,  $J = 7$  Hz, 2 H), 1.8-2.0 (m, 2 H), 0.75 (t,  $J = 8$  Hz, 2 H);  $^{13}\text{C}$  NMR ( $\text{CDCl}_3$ )  $\delta$  50.4, 41.9, 20.8, 6.1.

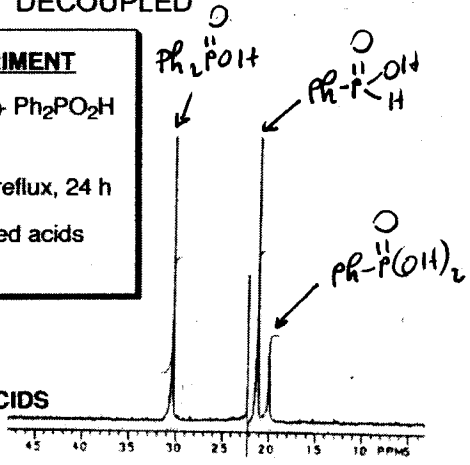
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 DATE 07-09-00  
 SOLVENT CDCL3  
 FILE P24

DECOUPLED

**COMPETITION EXPERIMENT**

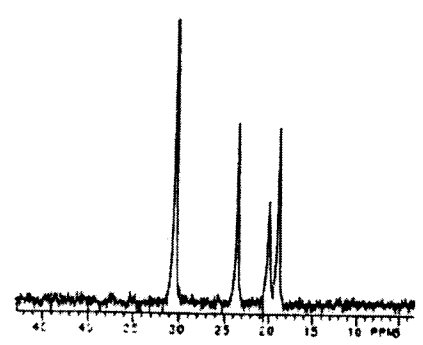
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 $\downarrow$   
 $(\text{EtO})_4\text{Si}$   
 toluene, reflux, 24 h  
 $\text{Ph}-\text{P}(=\text{O})(\text{H})-\text{OEt}$  + unreacted acids

MIXTURE OF STARTING ACIDS



$\text{PhPO}_2\text{(OH)} + \text{PhPO}_2\text{(OH)} + \text{PhPO}_2\text{(H)}$   
 EXP2 PULSE SEQUENCE ST013C  
 DATE 07-09-00  
 SOLVENT CDCL3  
 FILE P25

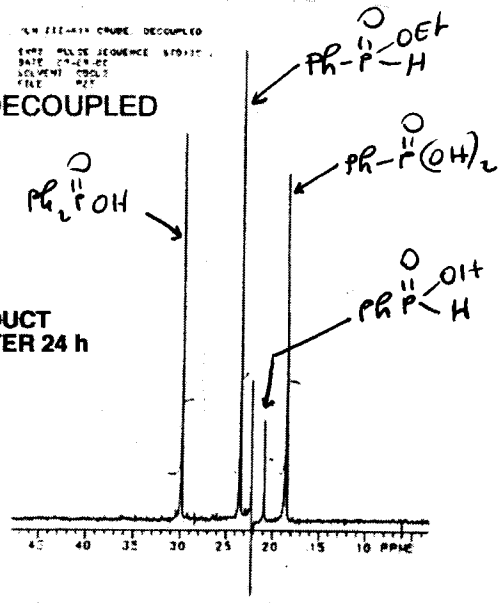
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$\text{Ph}_2\text{P(O)H}$   
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 $\text{Ph}-\text{P}(=\text{O})(\text{OH})_2$   
 $\text{Ph}-\text{P}(=\text{O})(\text{H})-\text{OEt}$   
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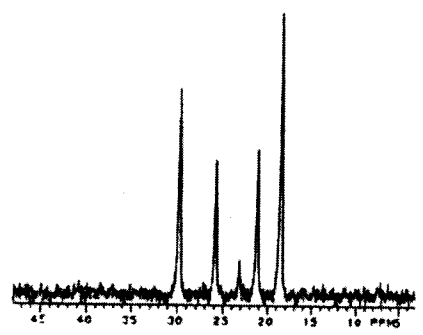
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CRUDE PRODUCT MIXTURE AFTER 24 h



$\text{Ph}_2\text{P(O)H}$   
 $\text{Ph}-\text{P}(=\text{O})(\text{H})-\text{OEt}$   
 $\text{Ph}-\text{P}(=\text{O})(\text{OH})_2$   
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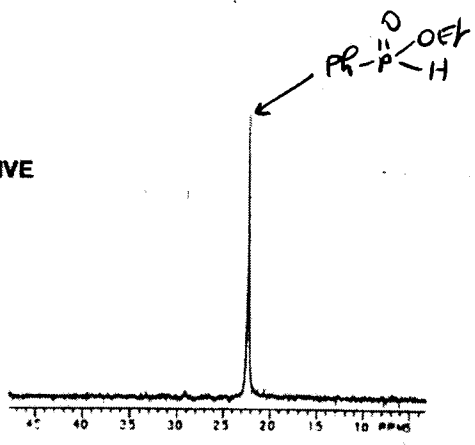
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$\text{Ph}_2\text{P(O)H}$   
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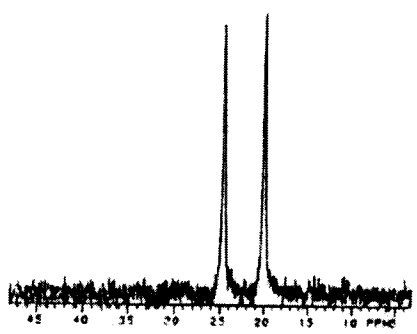
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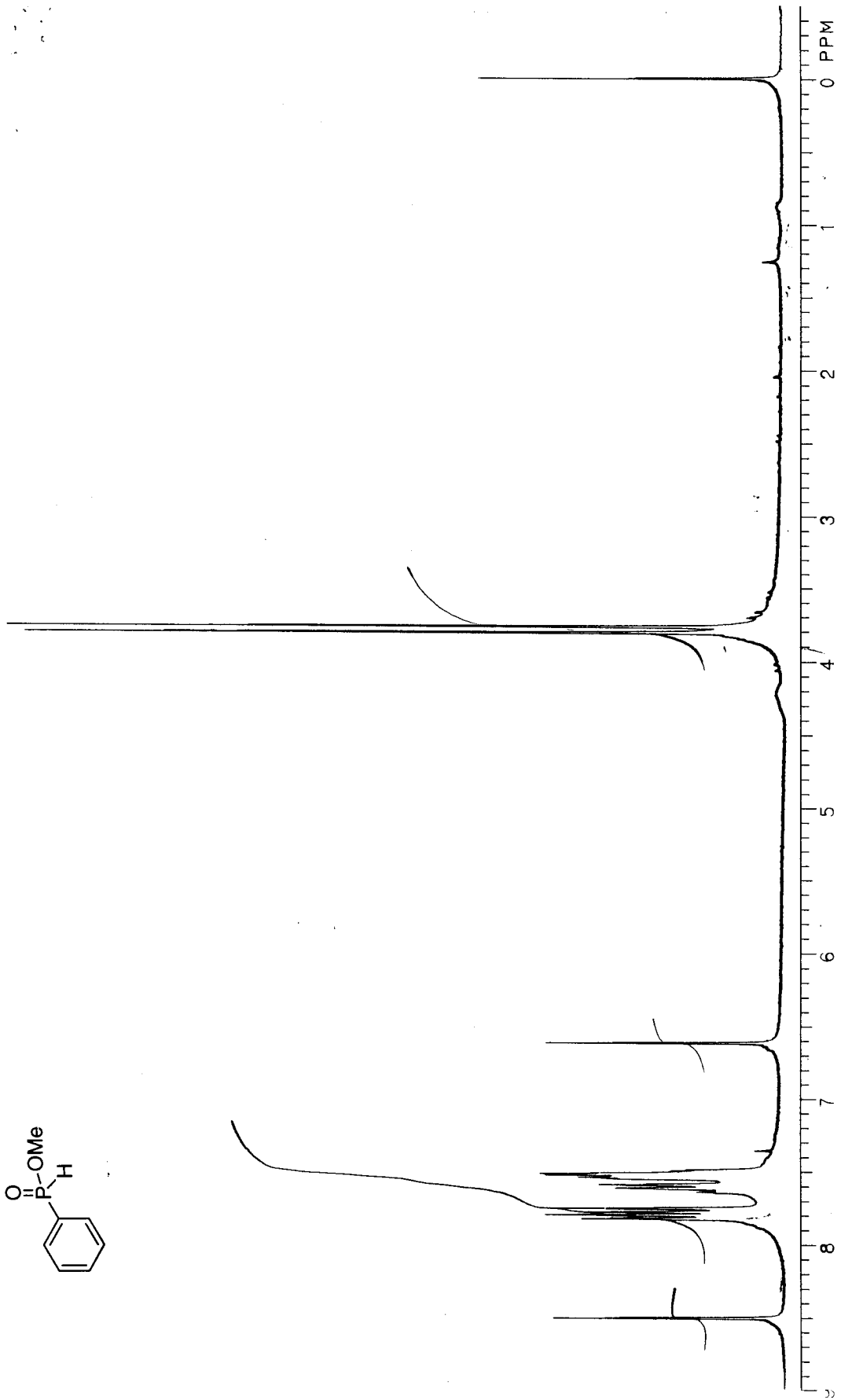
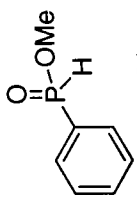
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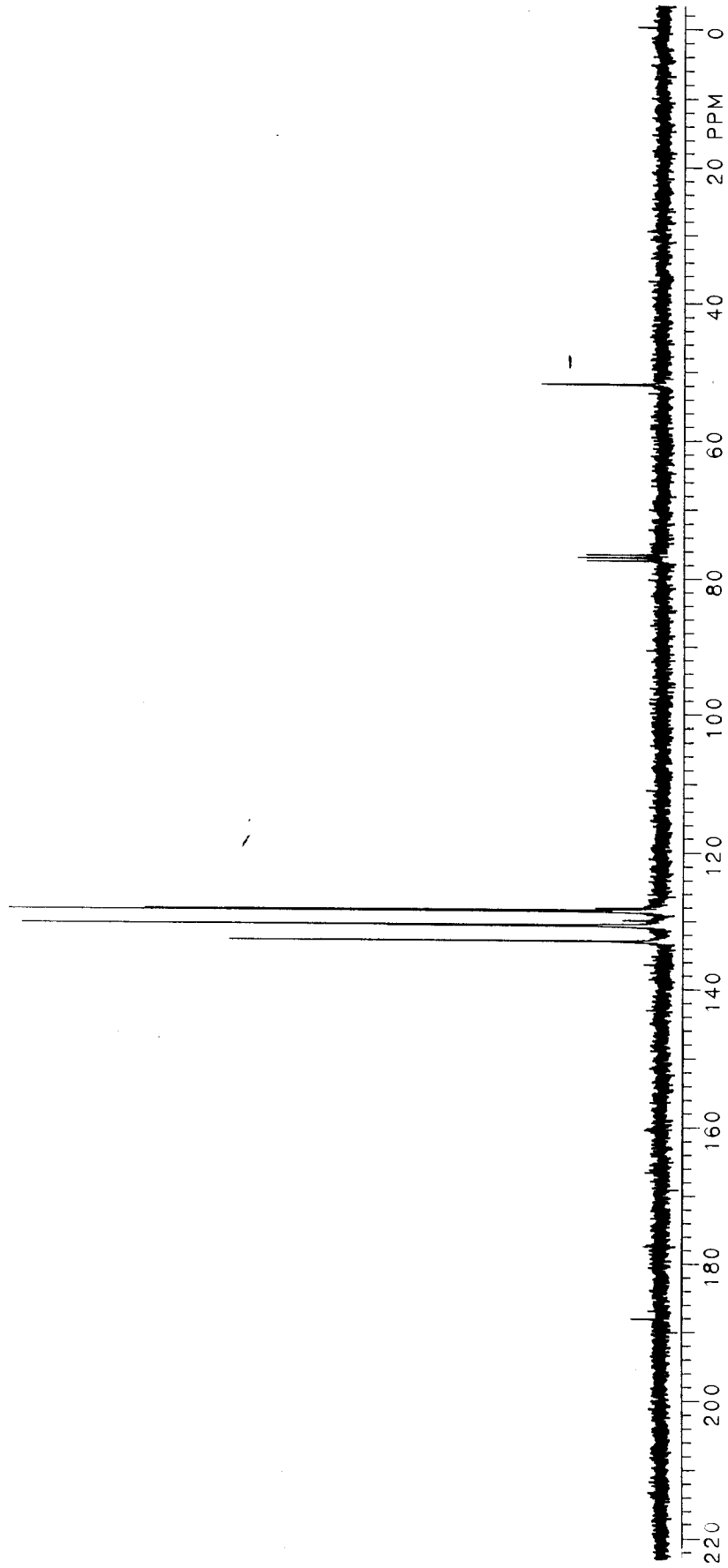
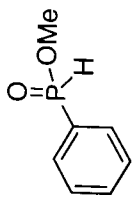


$\text{Ph}_2\text{P(O)H}$   
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 $\text{Ph}-\text{P}(=\text{O})(\text{OH})_2$   
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COUPLED

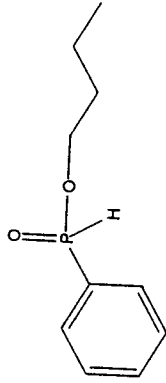




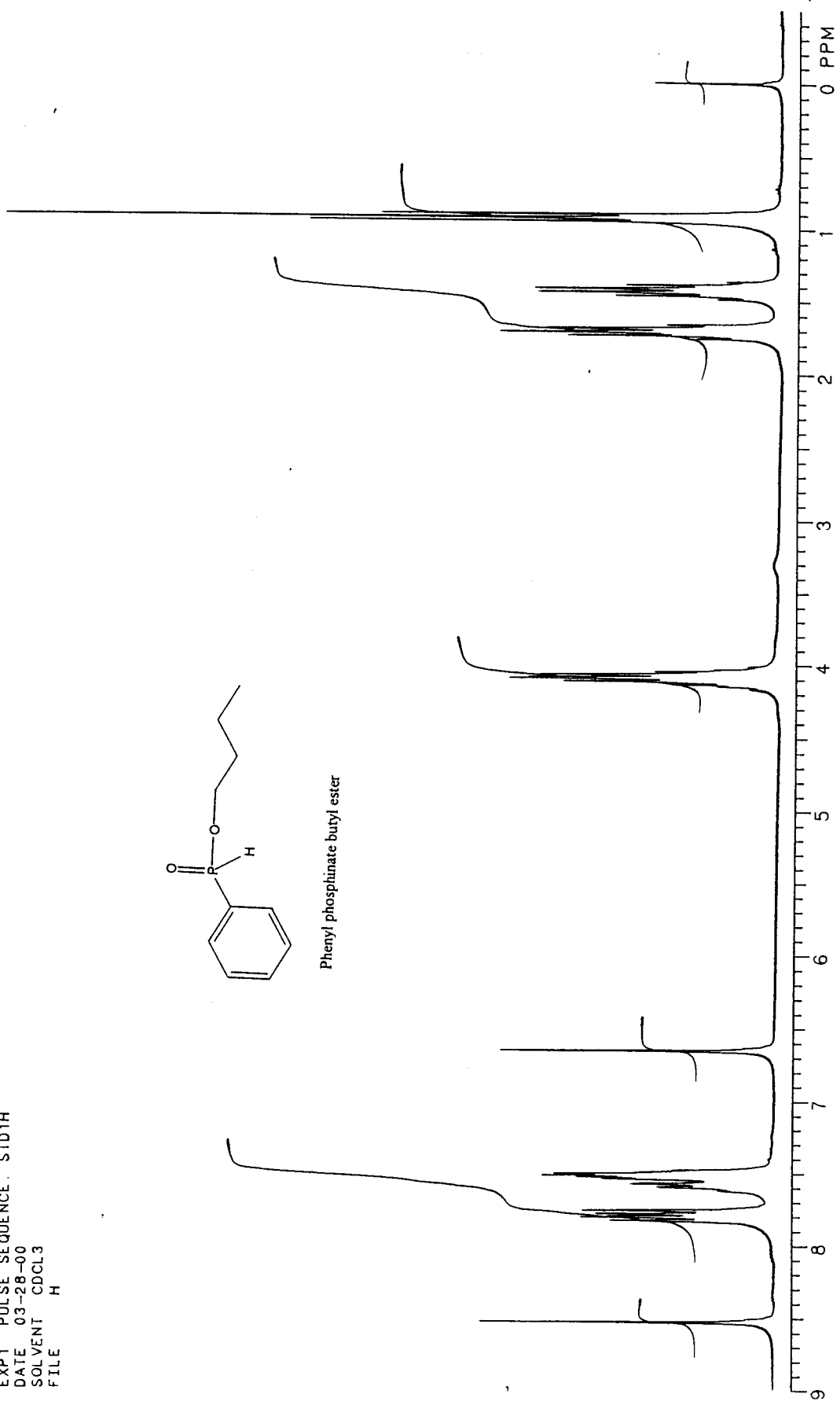


RB-37 PPOBU

EXP1 PULSE SEQUENCE. STD1H  
DATE 03-28-00  
SOLVENT CDCL3  
FILE H



Phenyl phosphinate butyl ester



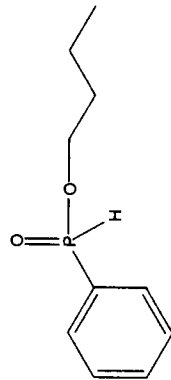
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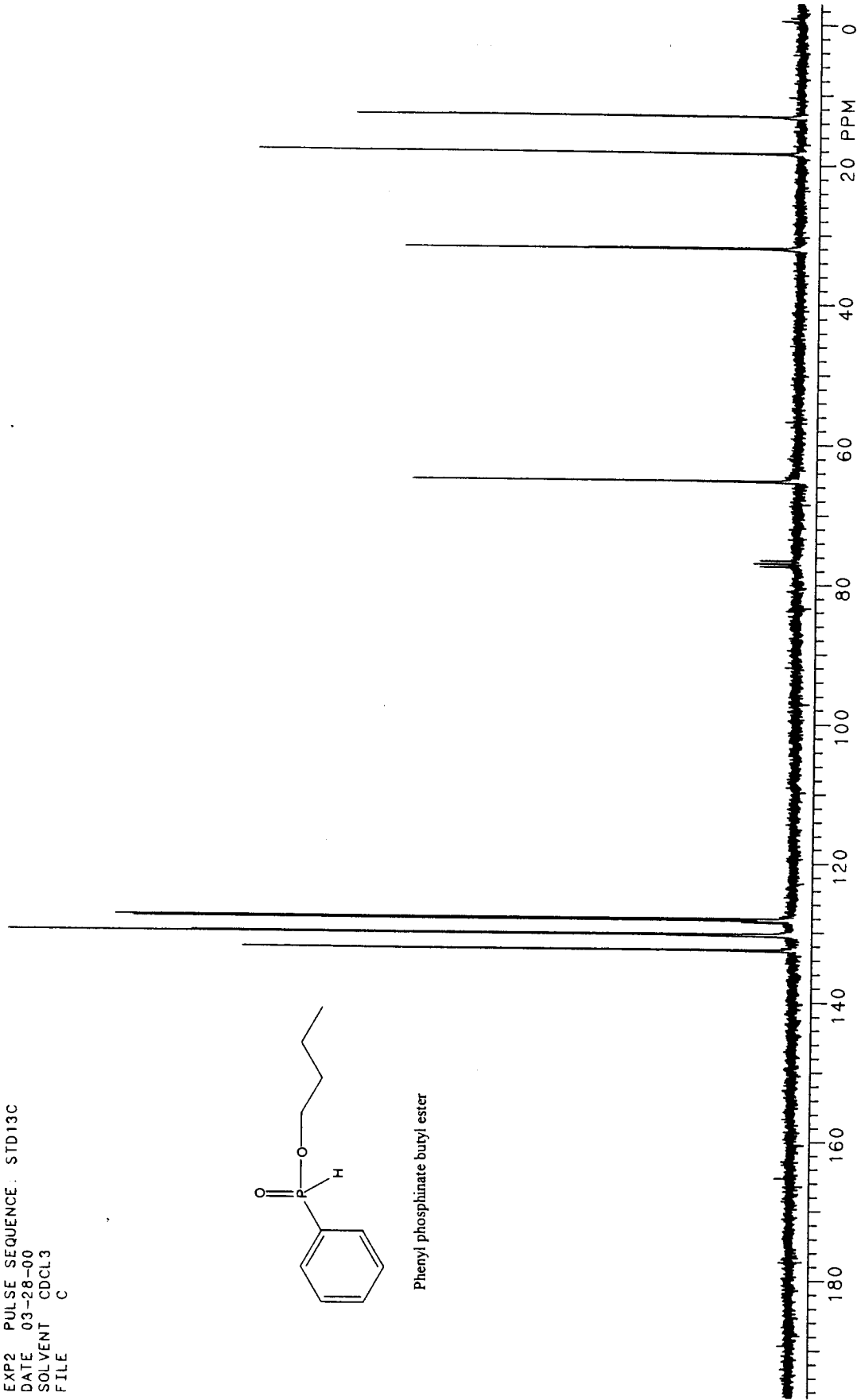
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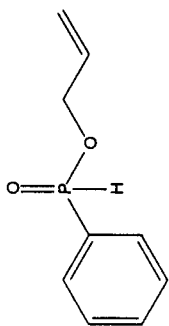
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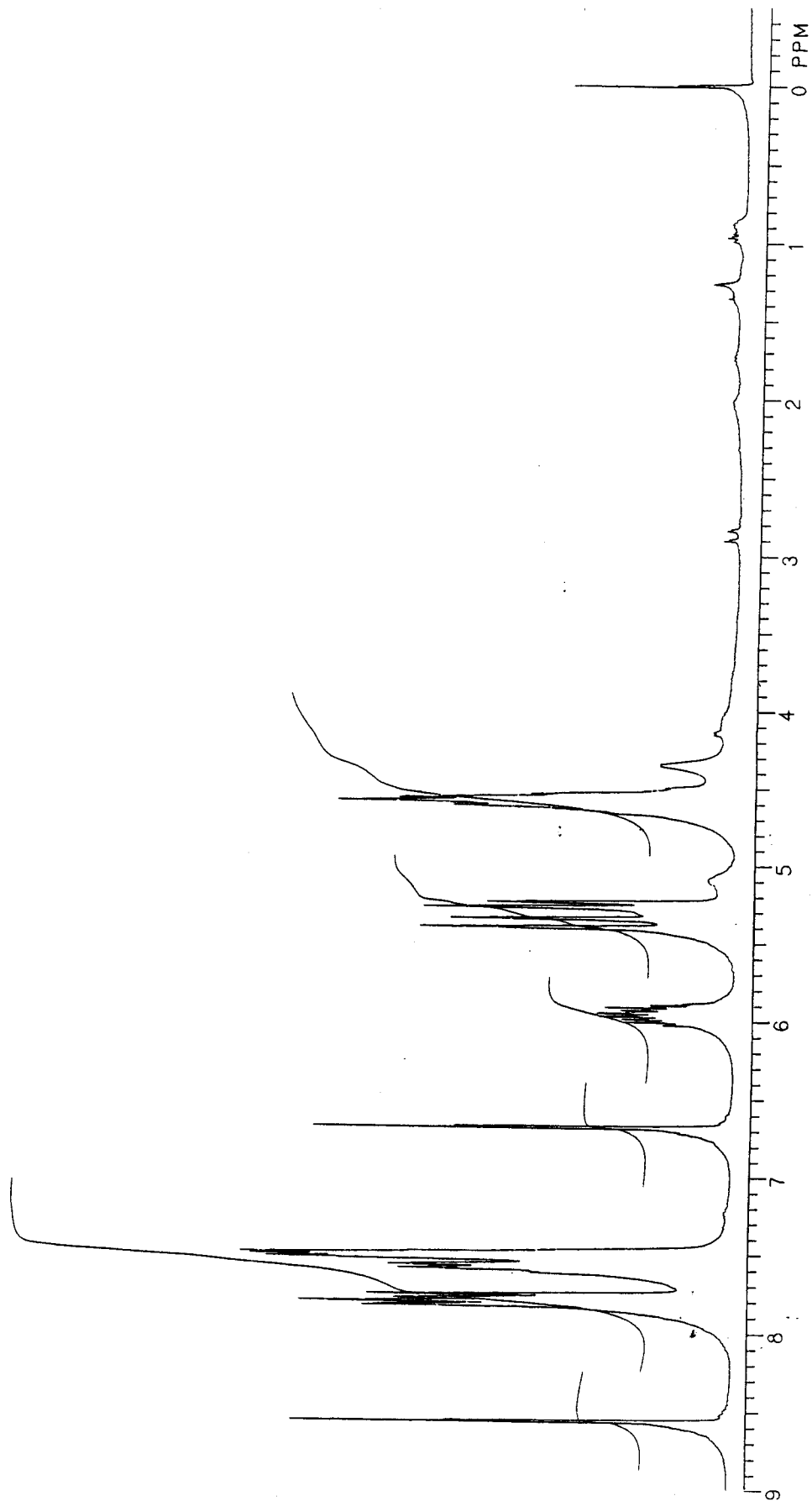
Phenyl phosphinate butyl ester

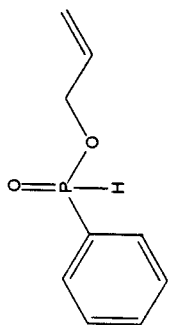




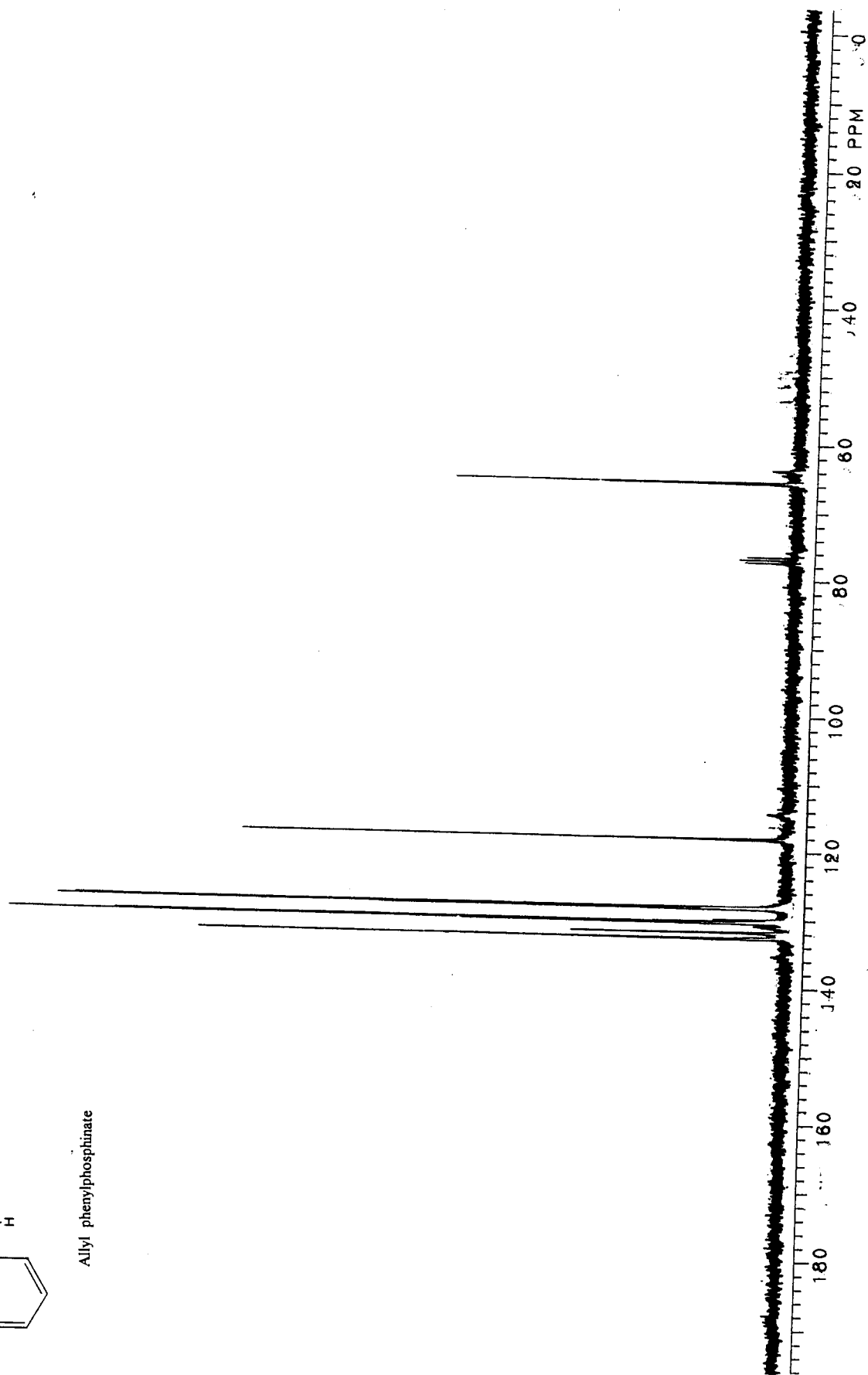


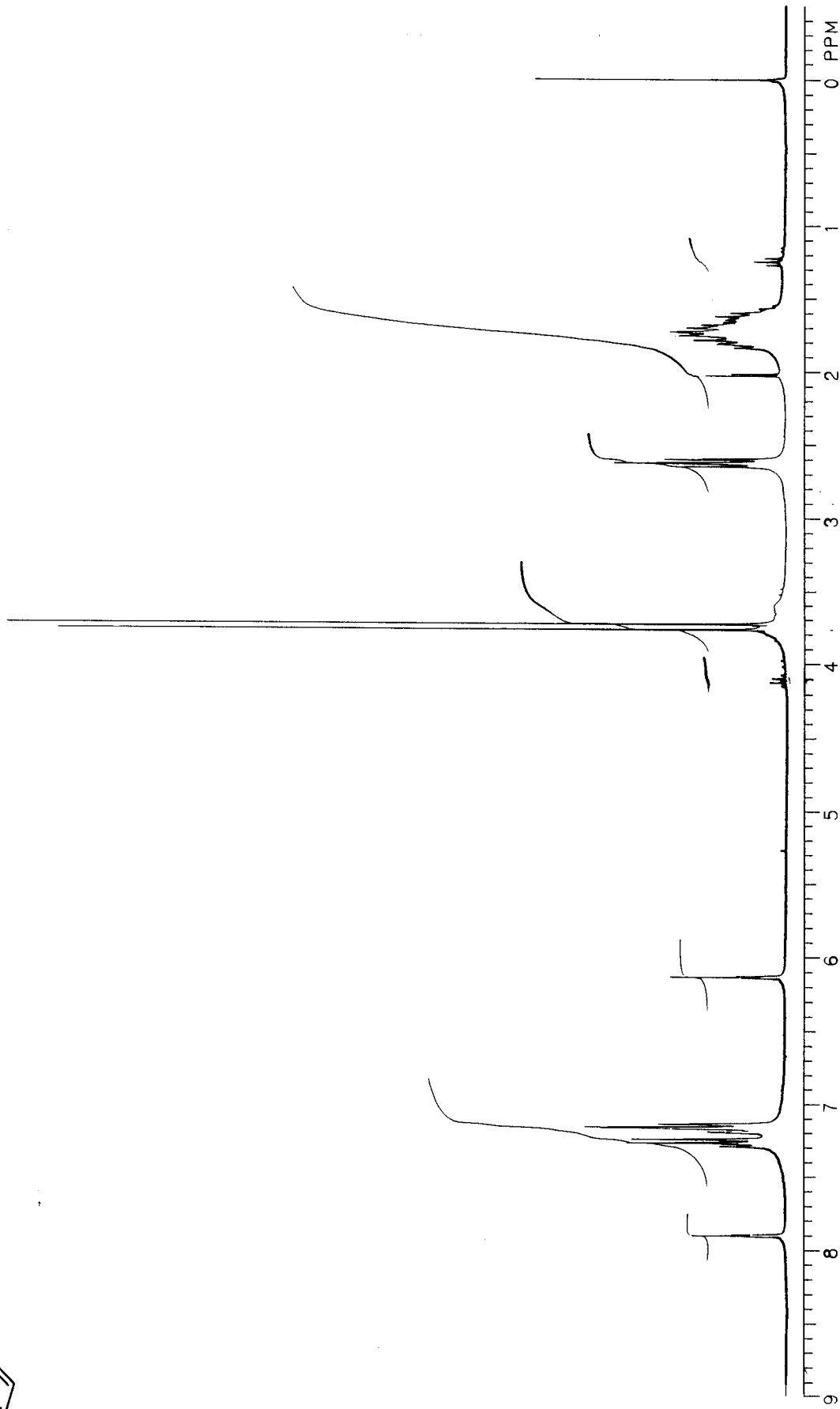
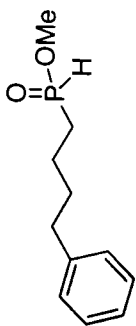
Allyl phenylphosphinate

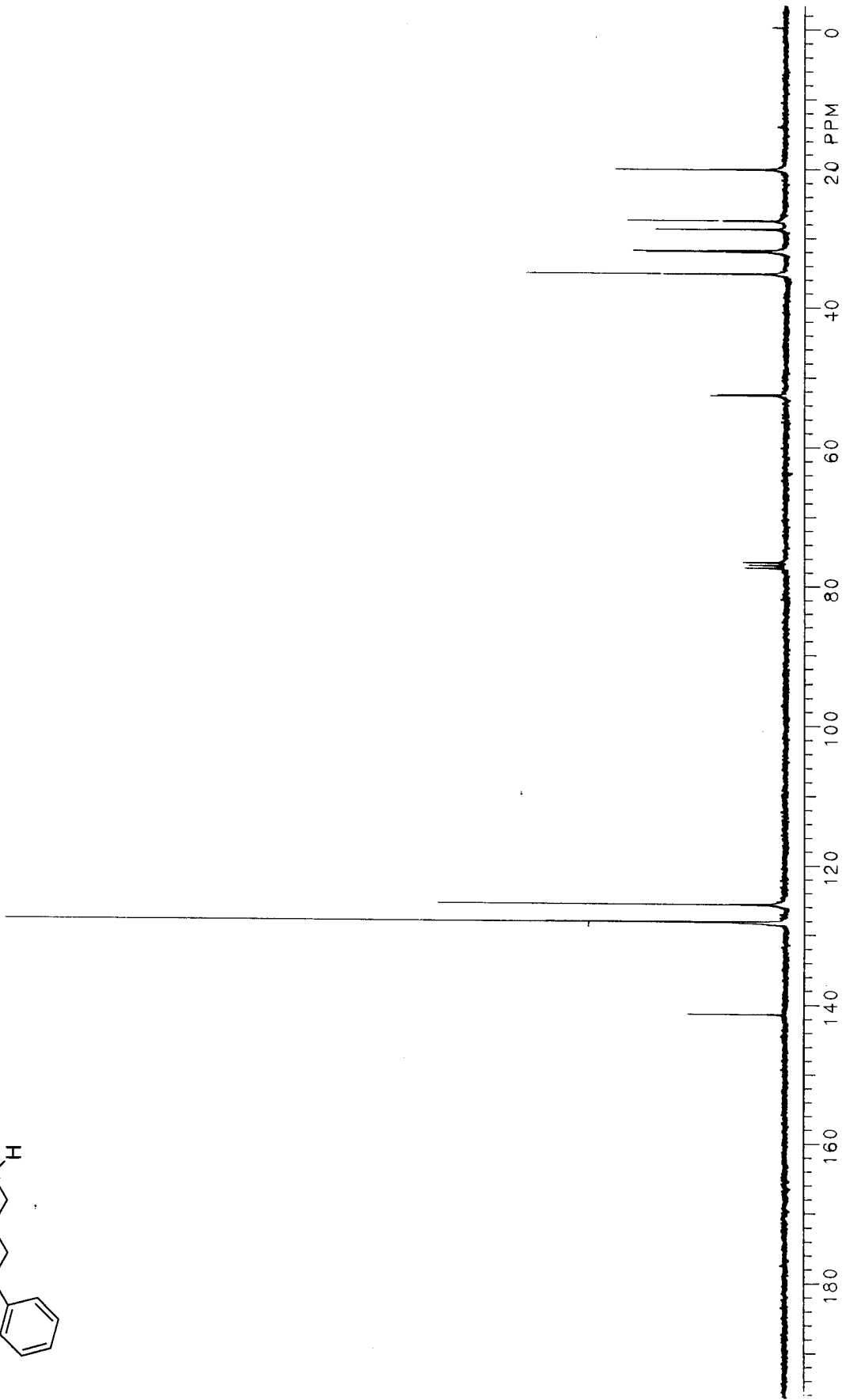
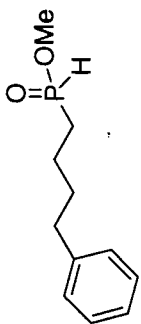




Allyl phenylphosphinate







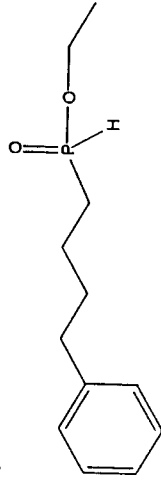
RB-65 PUMP

EXP1 PULSE SEQUENCE: STD1H

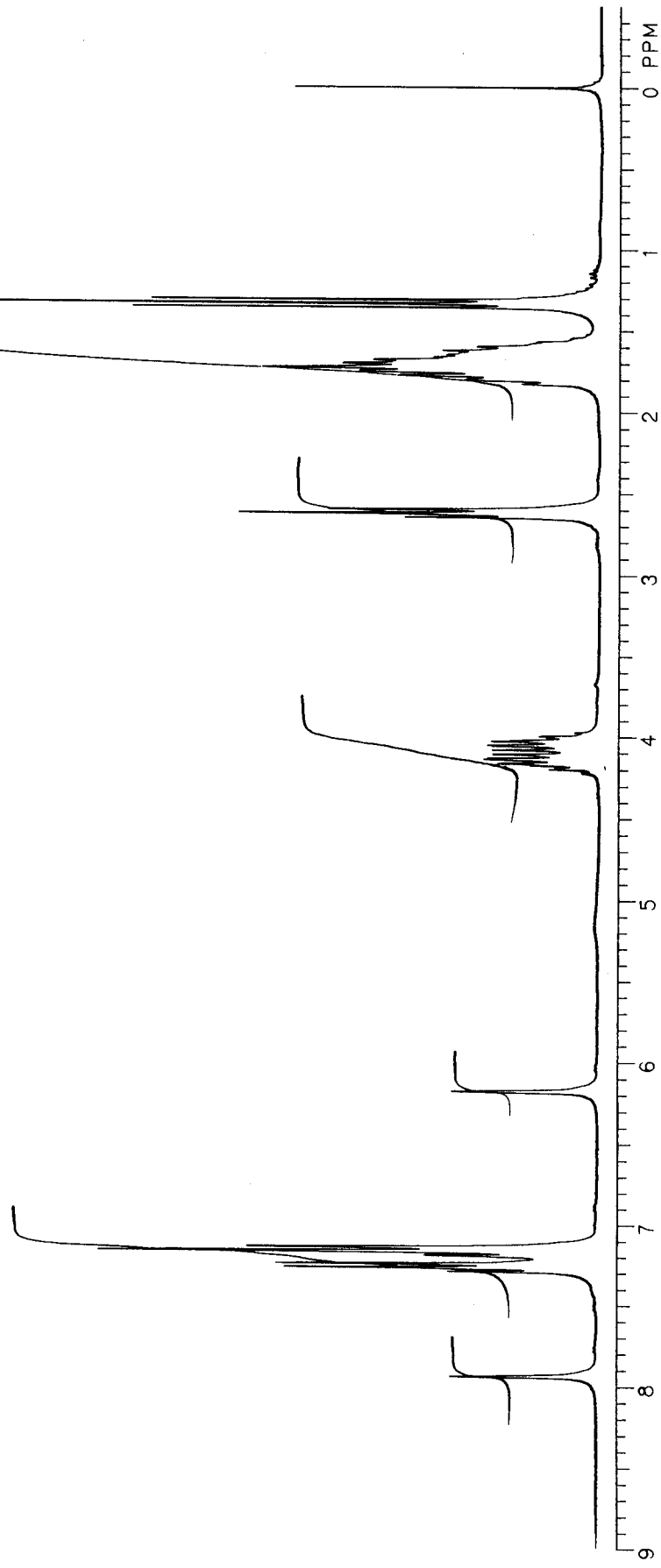
DATE 06-07-00

SOLVENT CDCL3

FILE H



Phenyl Butyl Phosphinate Ethyl Ester



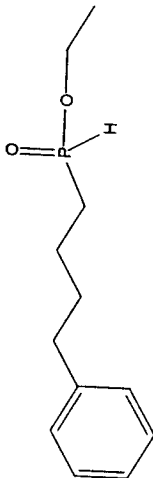
RB-65 PUMP

EXP2 PULSE SEQUENCE: STD13C

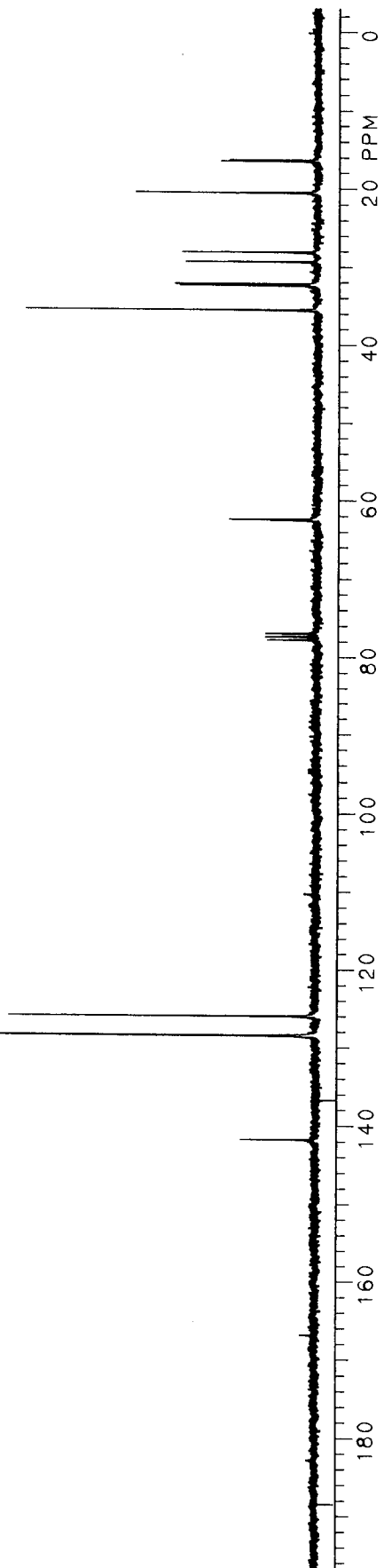
DATE 06-07-00

SOLVENT CDCL3

FILE C



Phenyl Butyl Phosphinate Ethyl Ester



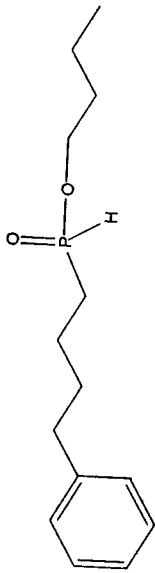
RB-67 PUMP

EXP1 PULSE SEQUENCE: STD1H

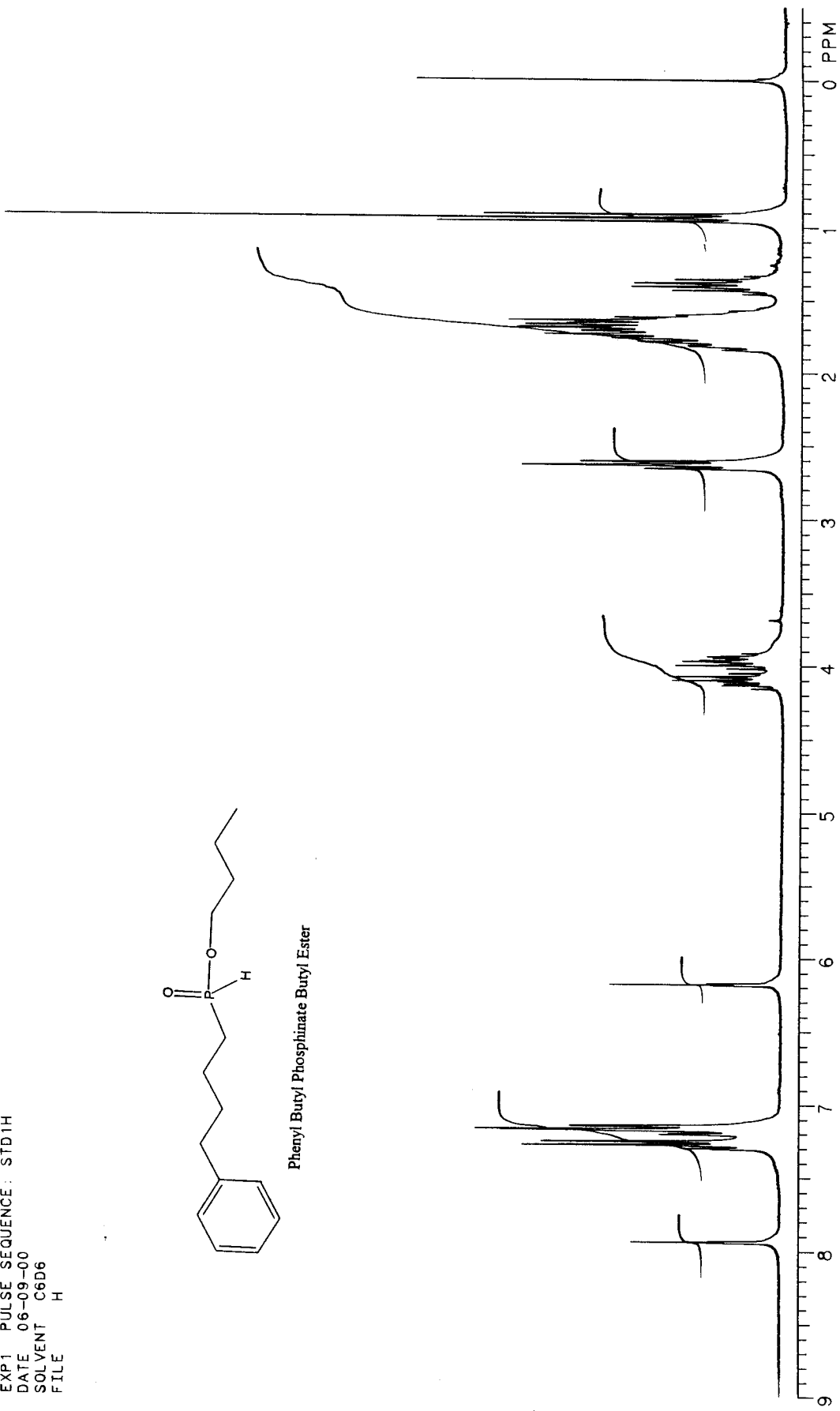
DATE 06-09-00

SOLVENT C6D6

FILE H



Phenyl Butyl Phosphinate Butyl Ester



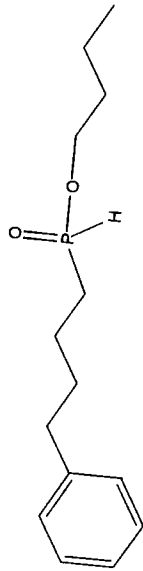
RB-67 PUMP

EXP2 PULSE SEQUENCE: STD13C

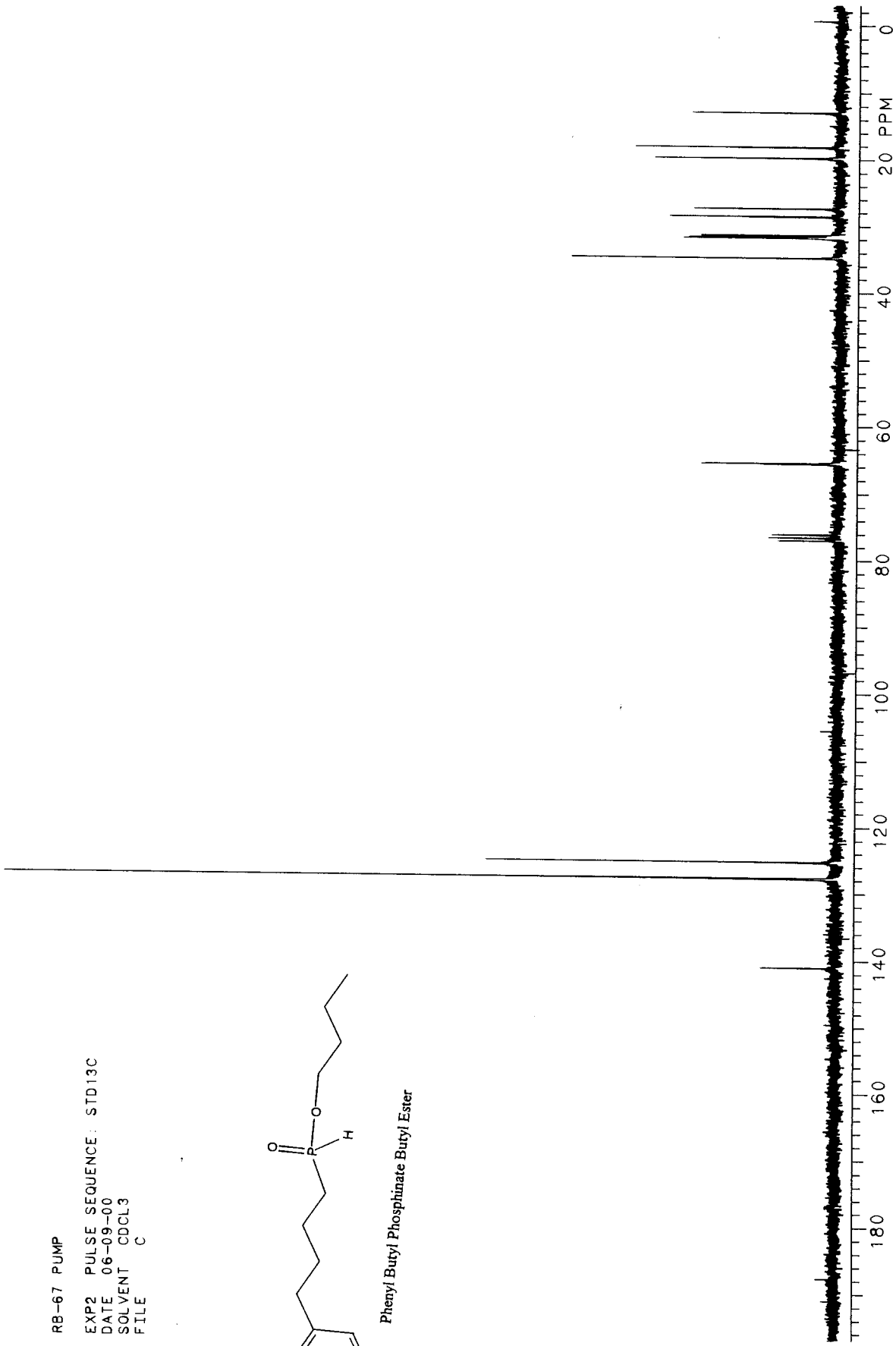
DATE 06-09-00

SOLVENT CDCL3

FILE C



Phenyl Butyl Phosphinate Butyl Ester





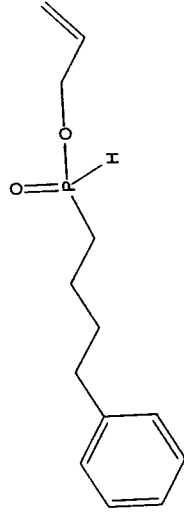
RB-74 PUMP

EXP1 PULSE SEQUENCE: STD1H

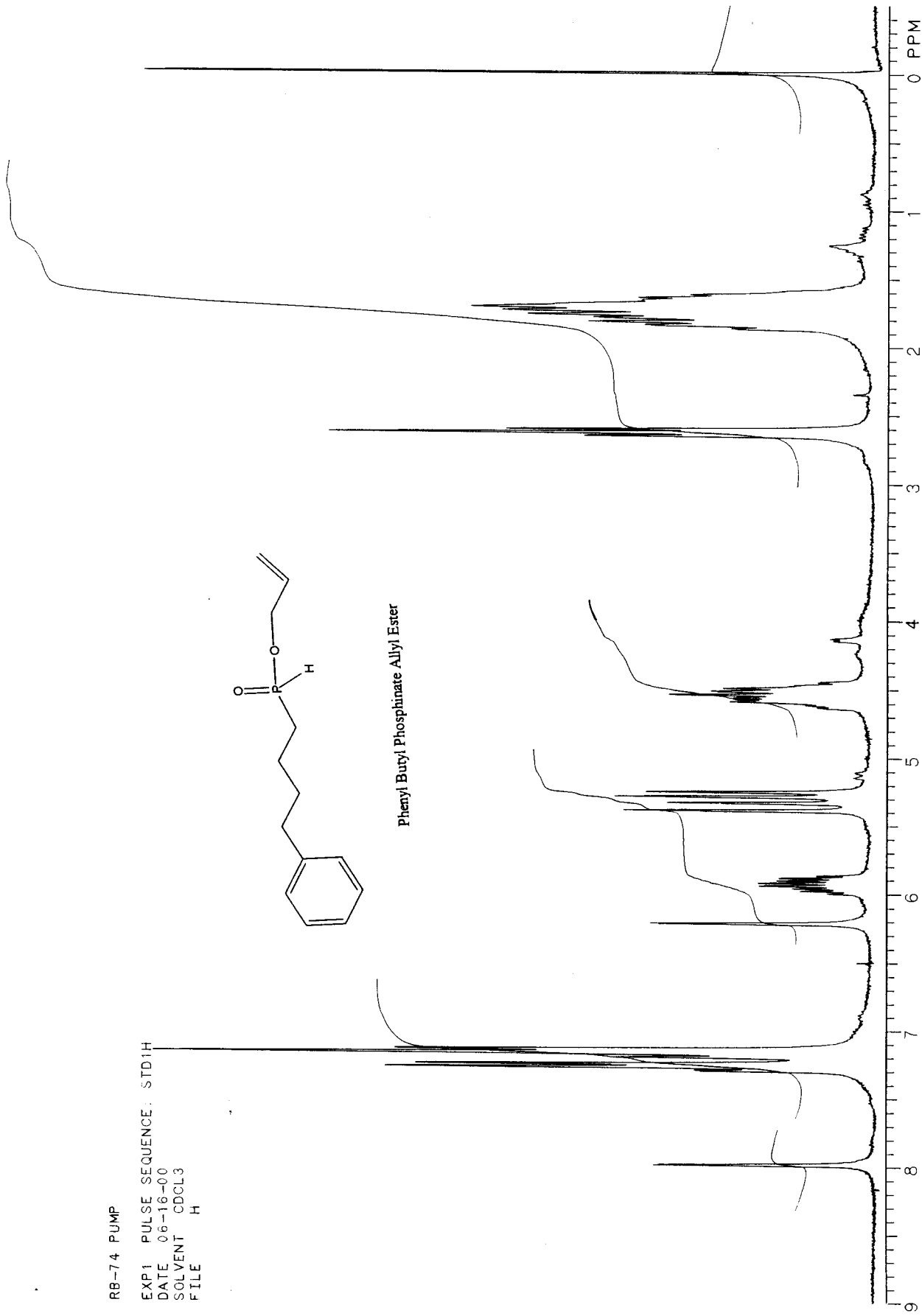
DATE 06-16-00

SOLVENT CDCL3

FILE H



Phenyl Butyl Phosphinate Allyl Ester



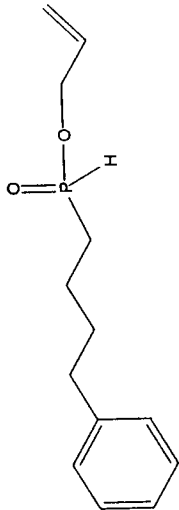
RB-74 PUMP

EXP2 PULSE SEQUENCE: STD13C

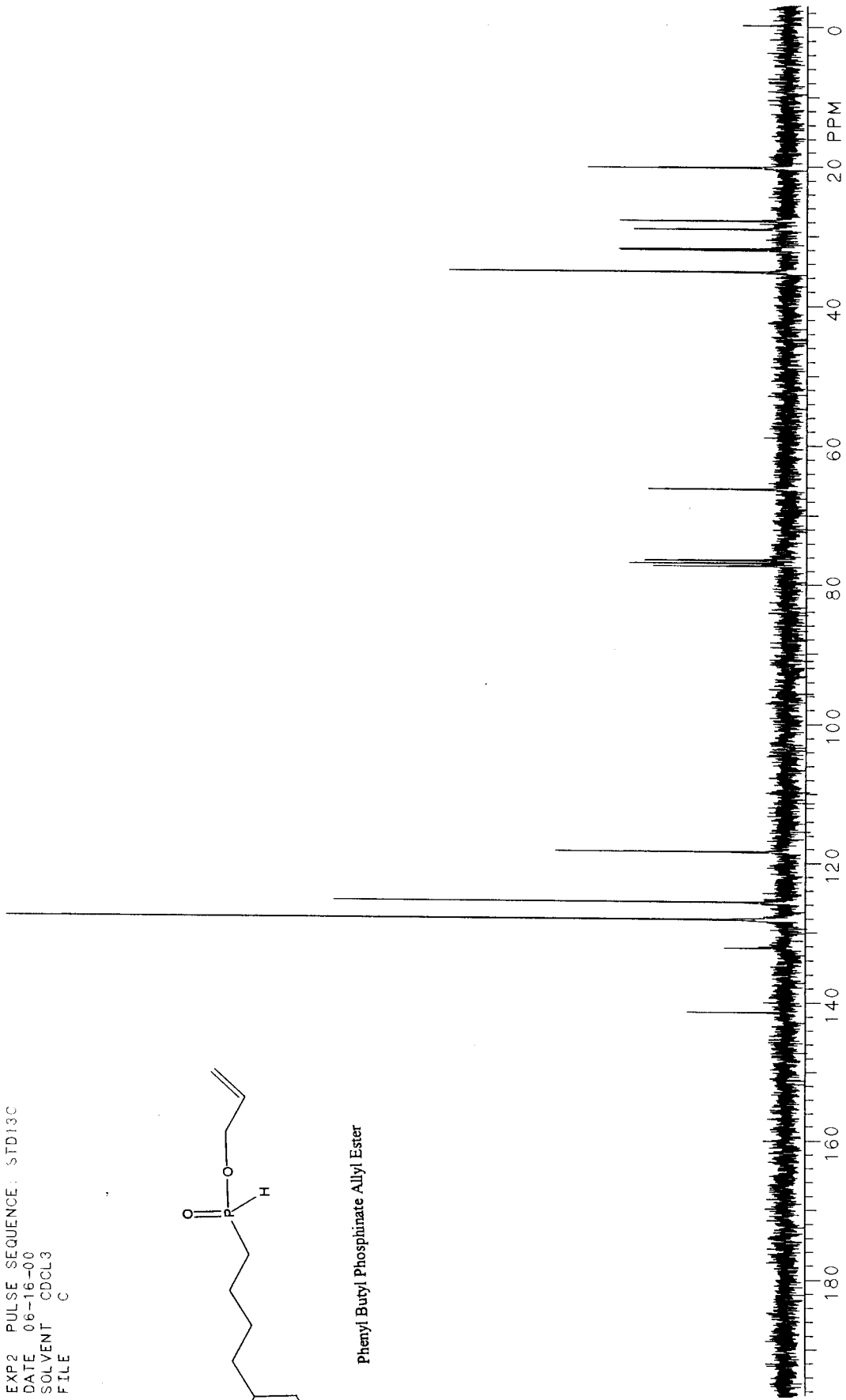
DATE 06-16-00

SOLVENT CDCL3

FILE C



Phenyl Butyl Phosphinate Allyl Ester



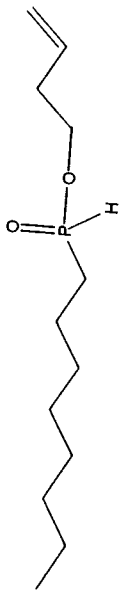
RB-77-II

EXP1 PULSE SEQUENCE: STD1H

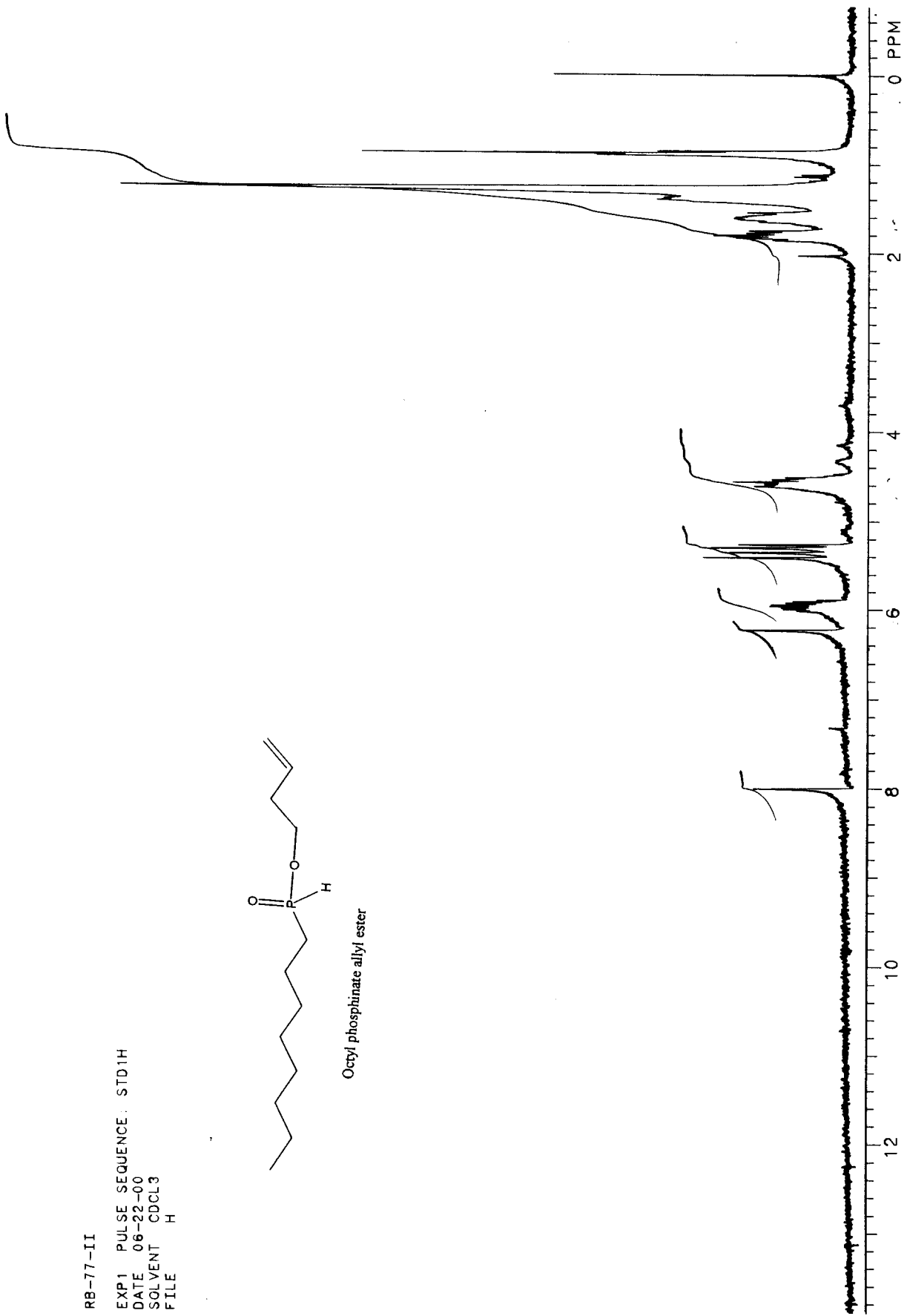
DATE 06-22-00

SOLVENT CDCL3

FILE H

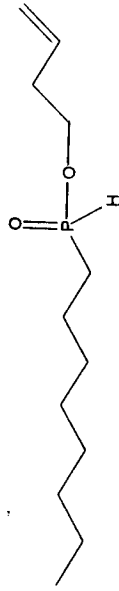


Octyl phosphinate allyl ester

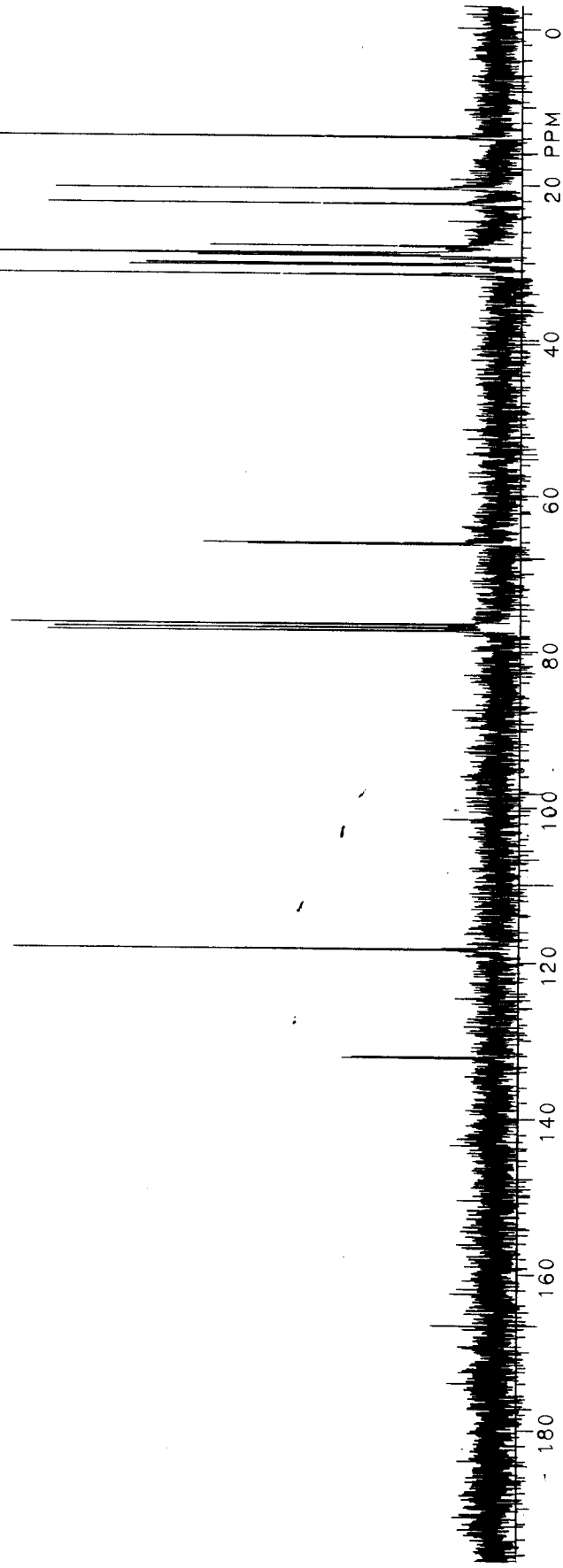


RB-77-II

EXP2 PULSE SEQUENCE. STD13C  
DATE 06-22-00  
SOLVENT CDCL3  
FILE C



Octyl phosphinate allyl ester



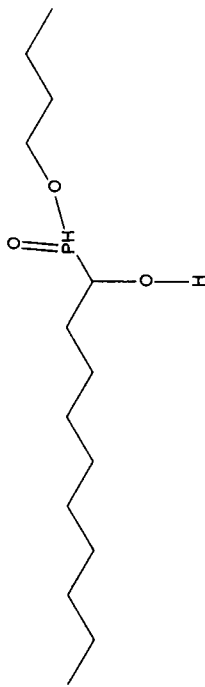
RB-85

EXP1 PULSE SEQUENCE: STD1H

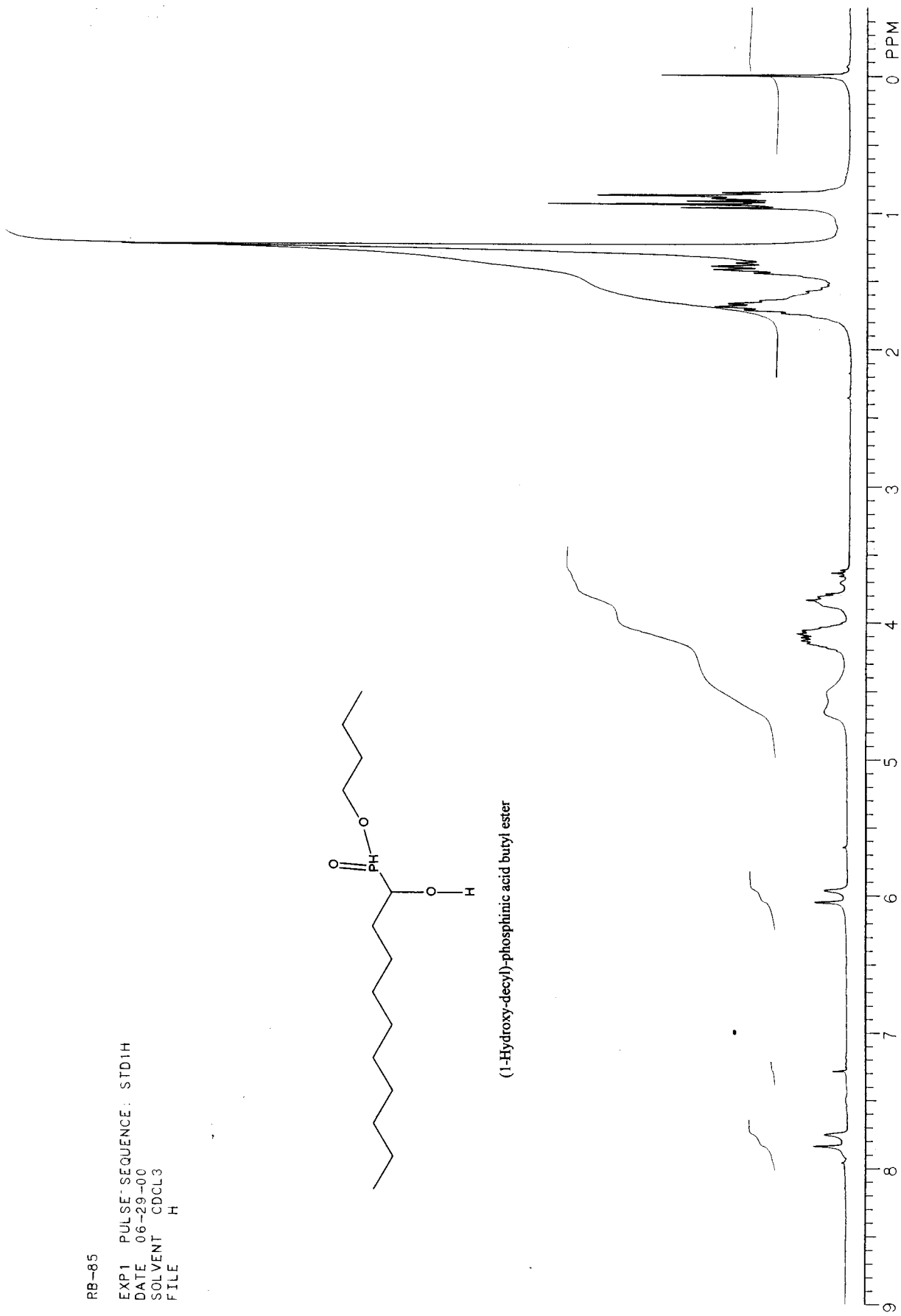
DATE 06-29-00

SOLVENT CDCL3

FILE H

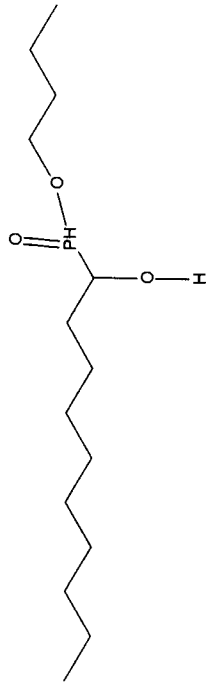


(1-Hydroxy-decyl)-phosphinic acid butyl ester

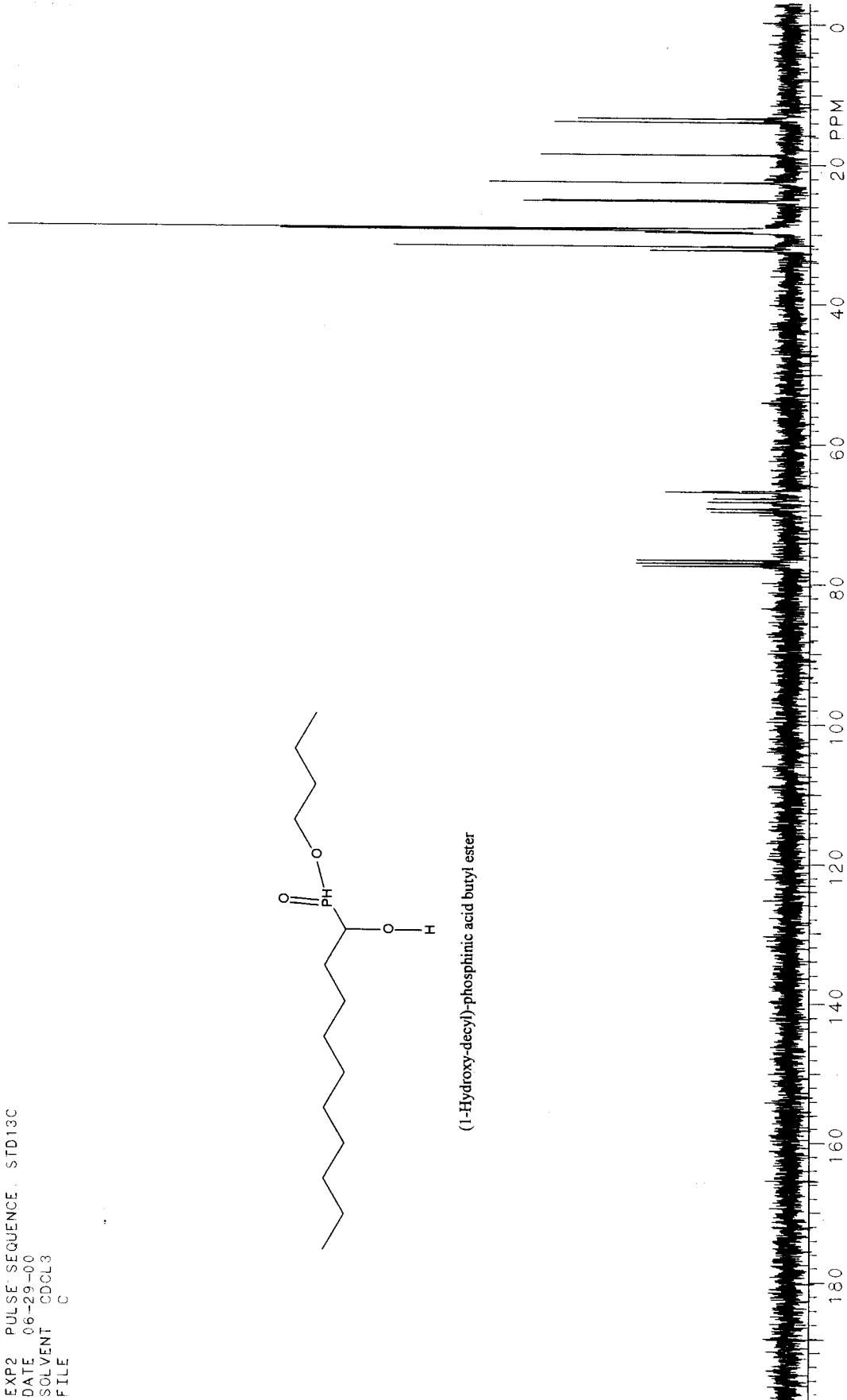


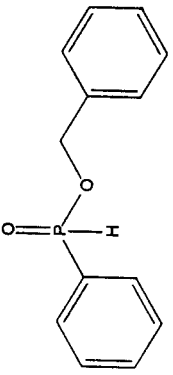
RB-85

EXP2 PULSE SEQUENCE. STD13C  
DATE 06-29-00  
SOLVENT CDCL3  
FILE C

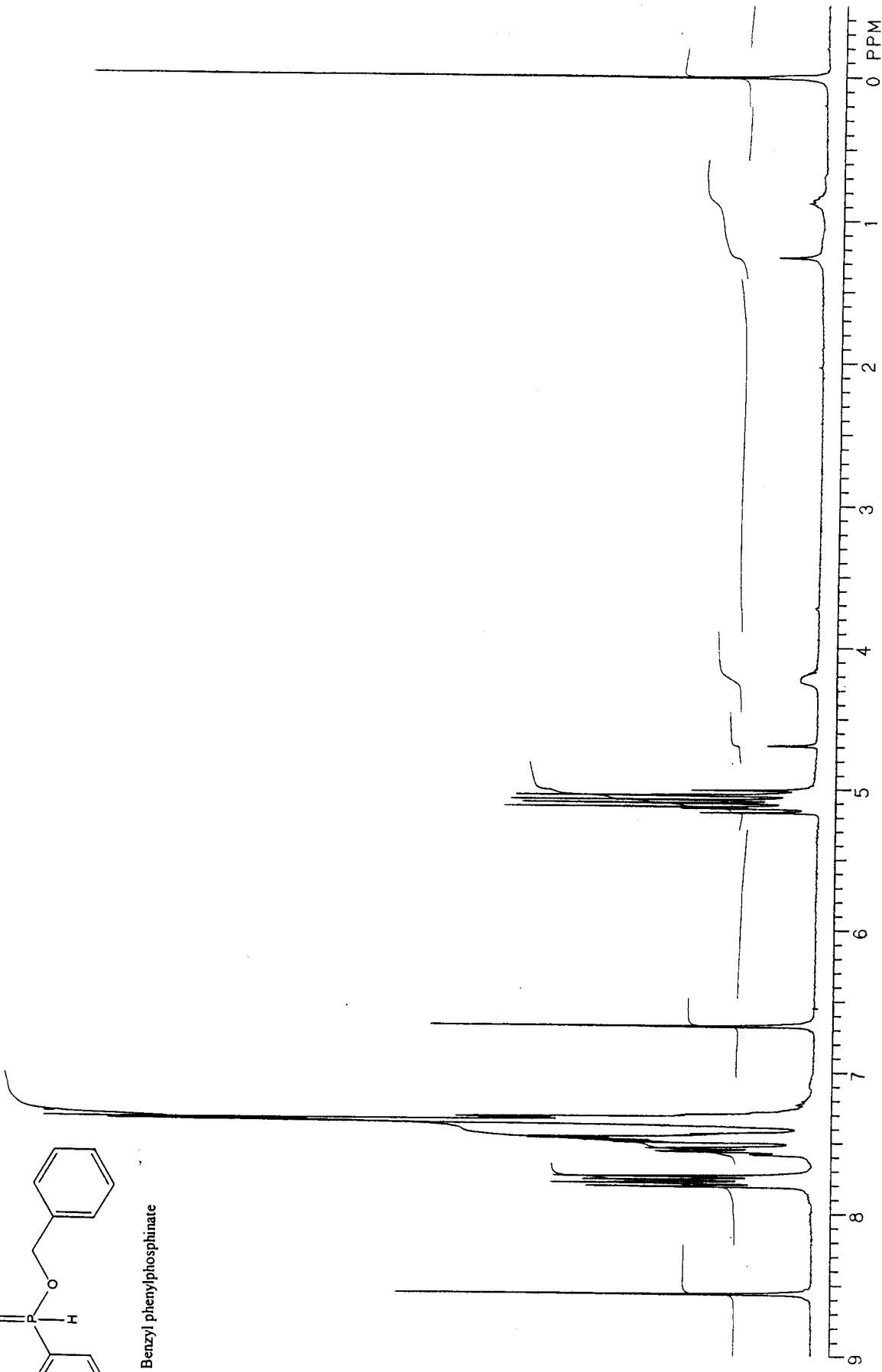


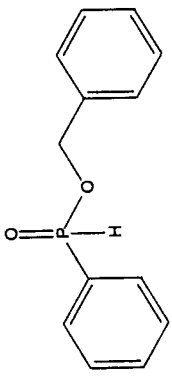
(1-Hydroxy-decyl)-phosphinic acid butyl ester



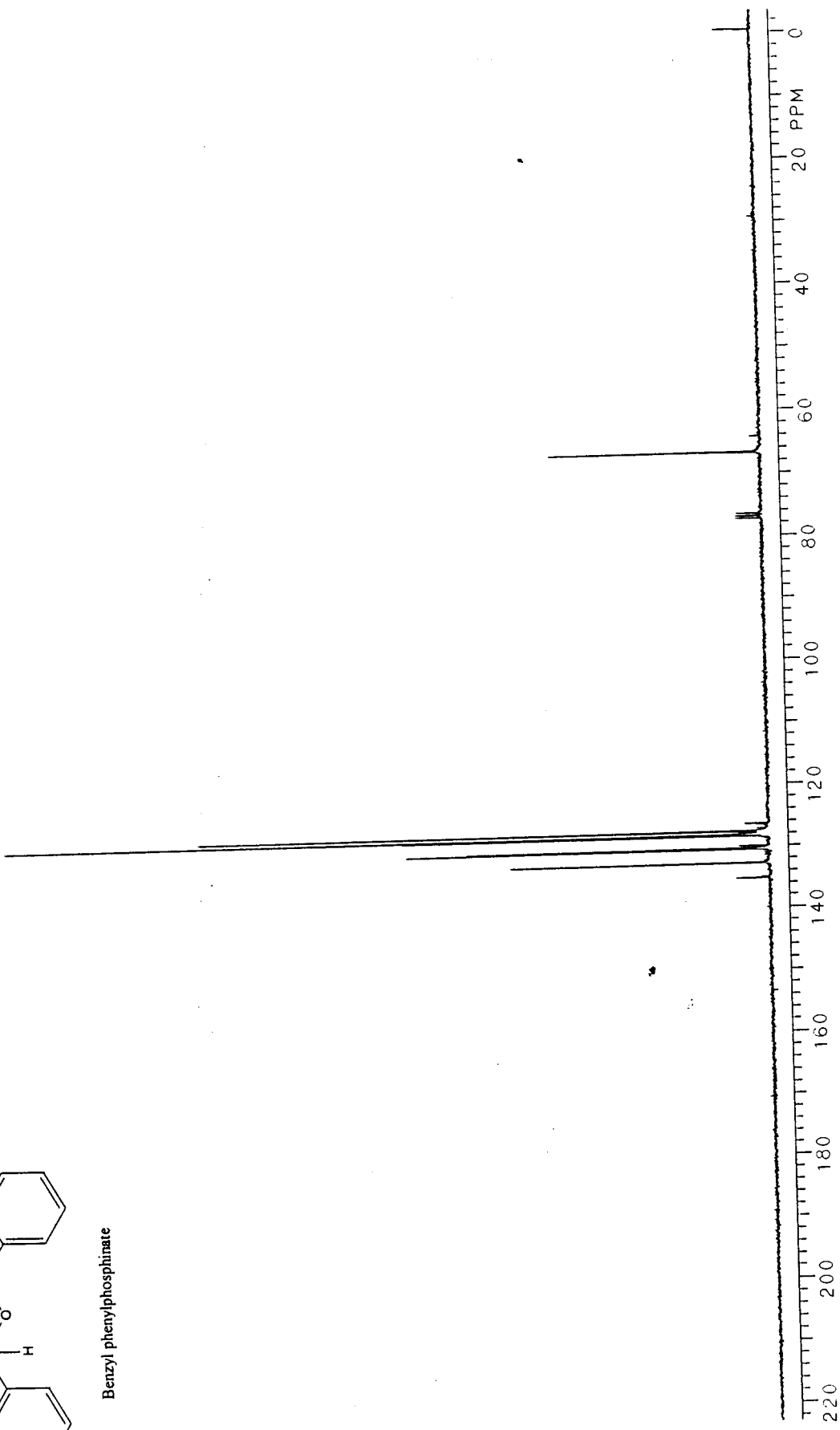


Benzyl phenylphosphinate

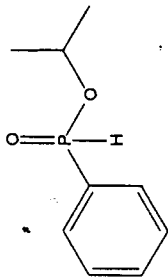




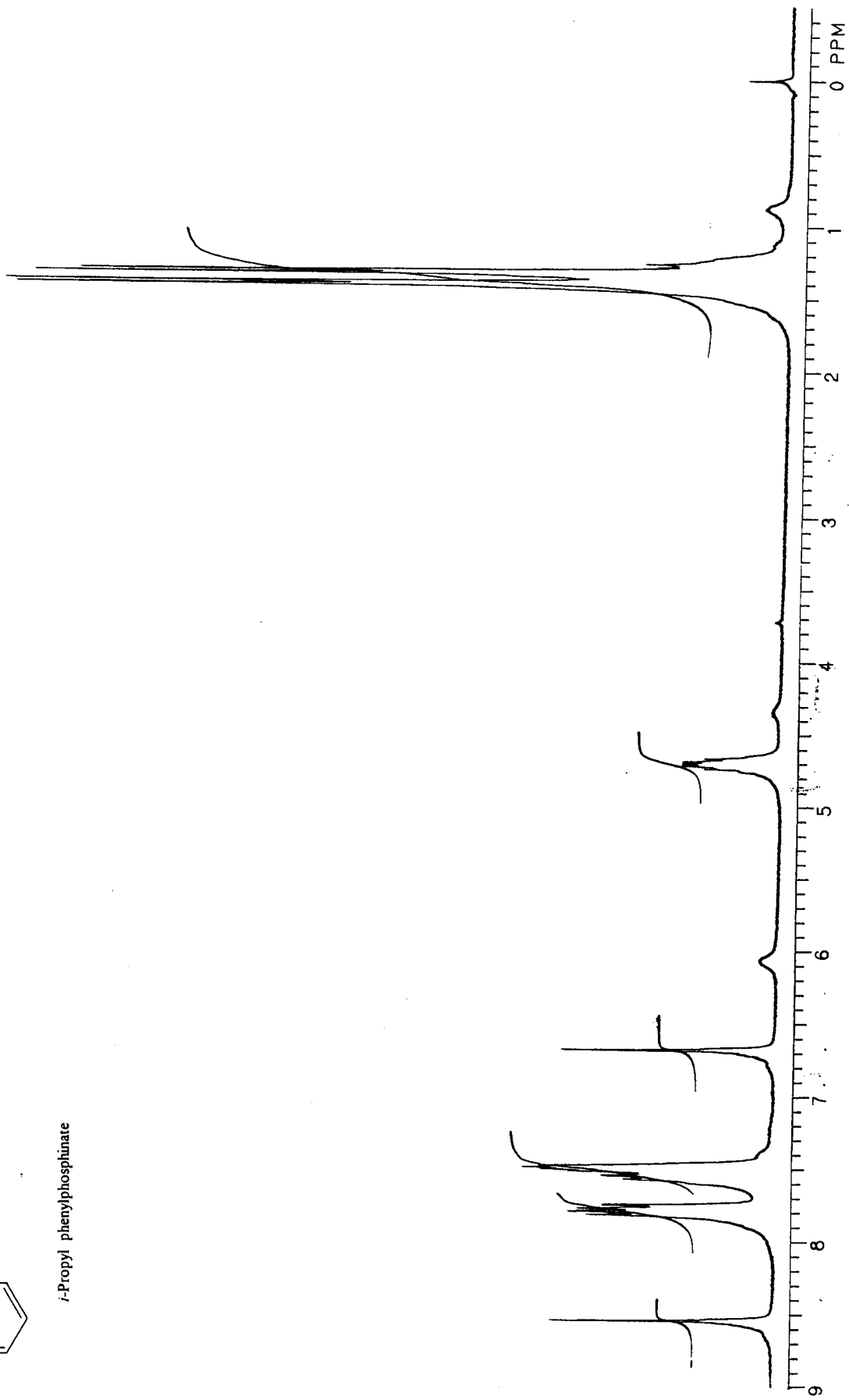
Benzyloxy phosphinic acid

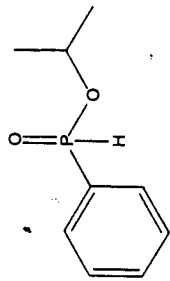




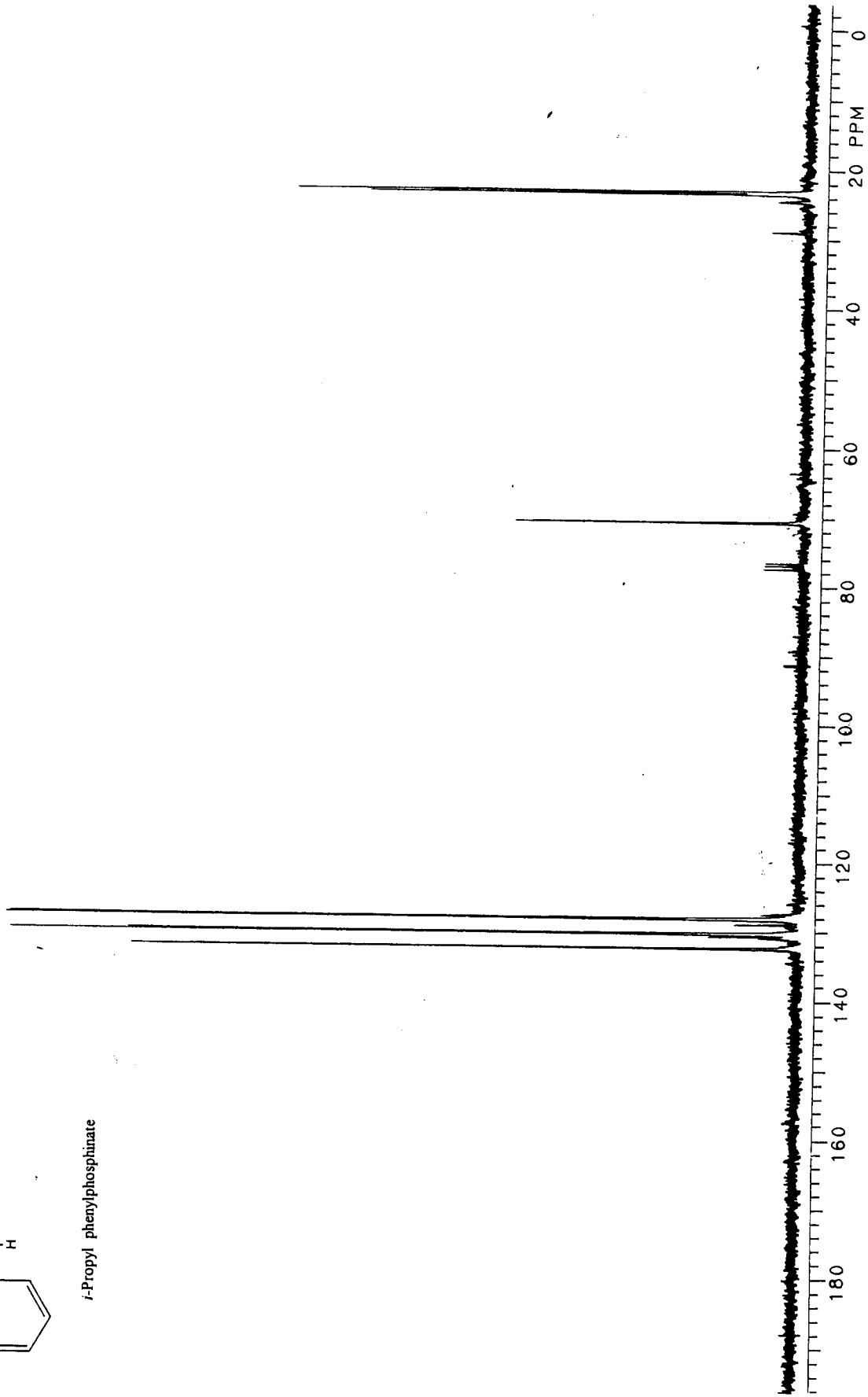


*i*-Propyl phenylphosphinate

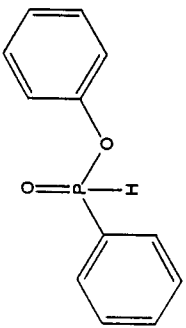




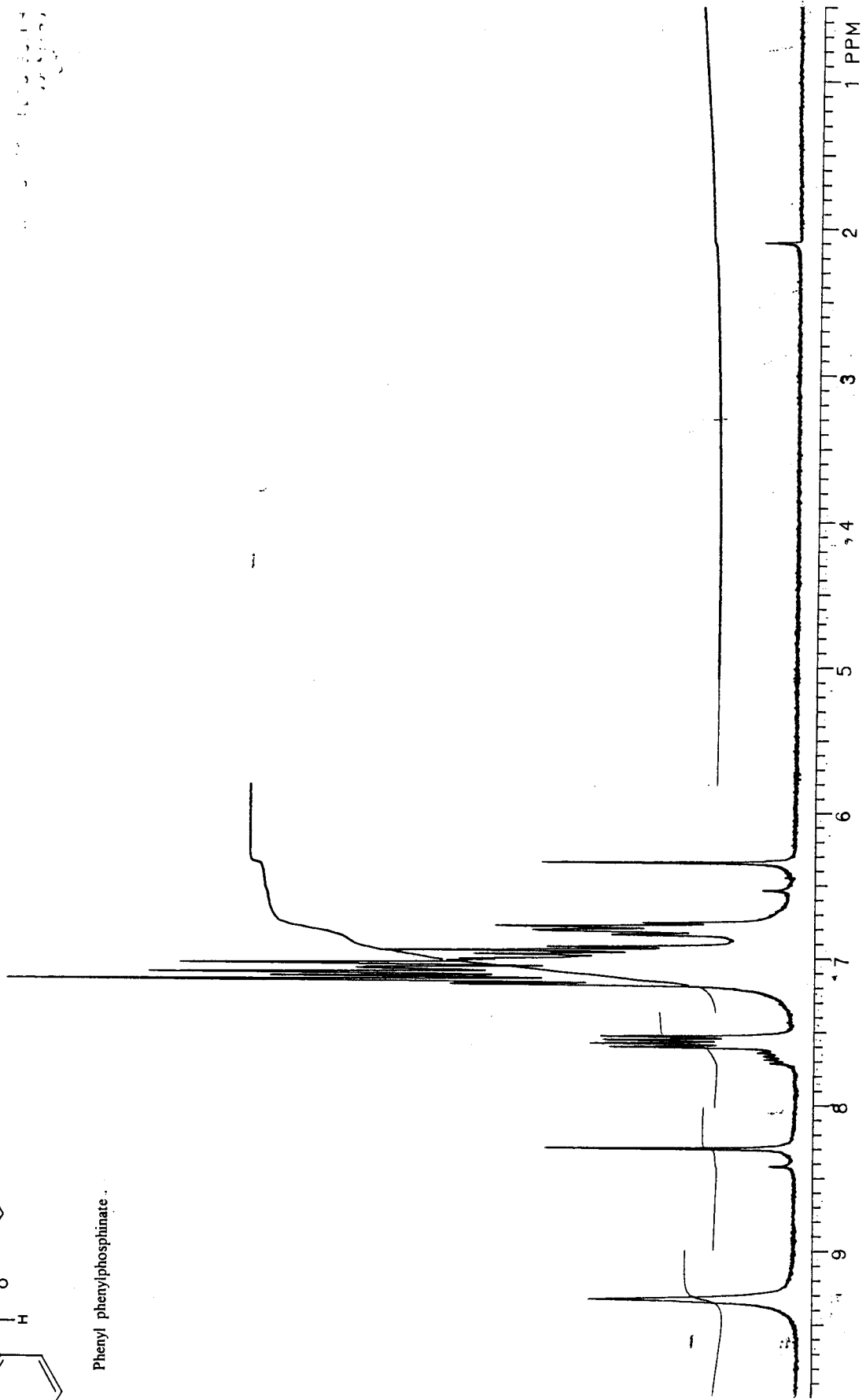
*i*-Propyl phenylphosphinate

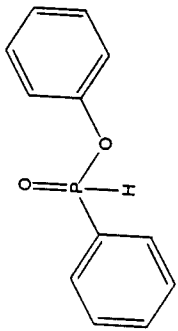


Phosphorus-31 NMR spectrum of Phenyl phosphinate

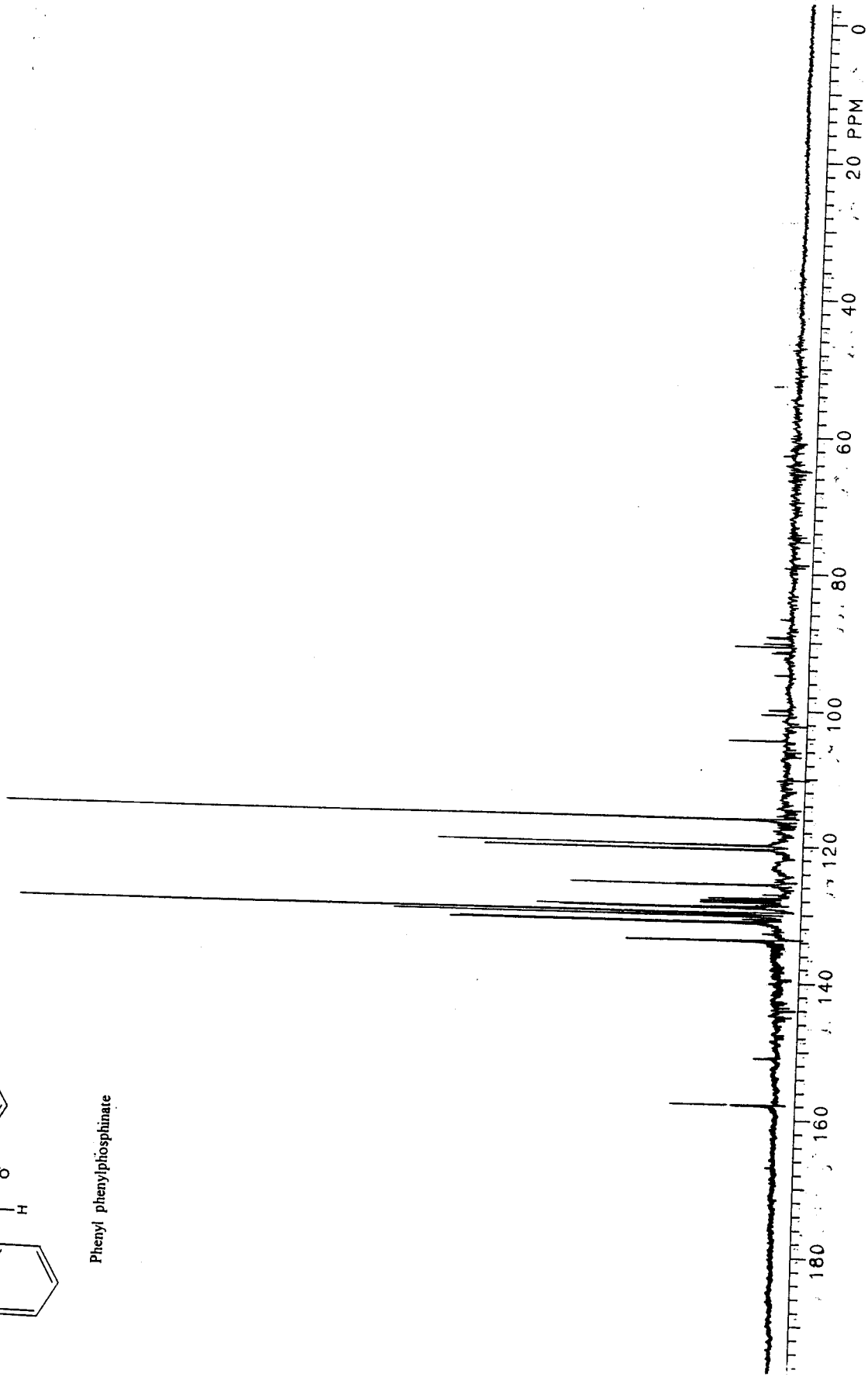


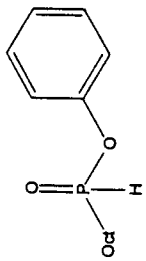
Phenyl phosphinate



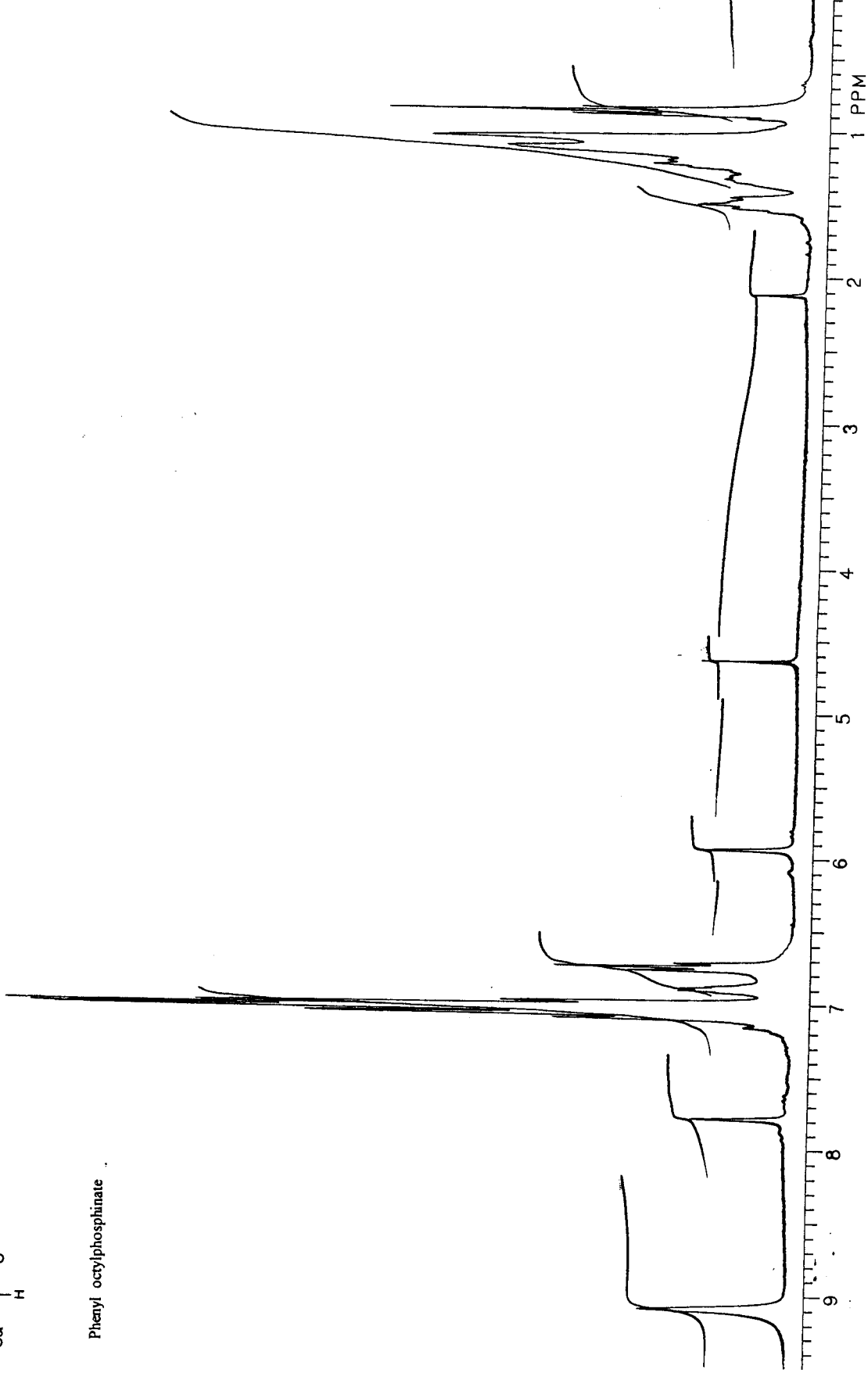


Phenyl phosphinate



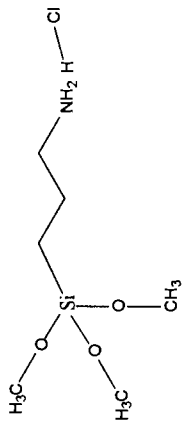


Phenyl octylphosphinate

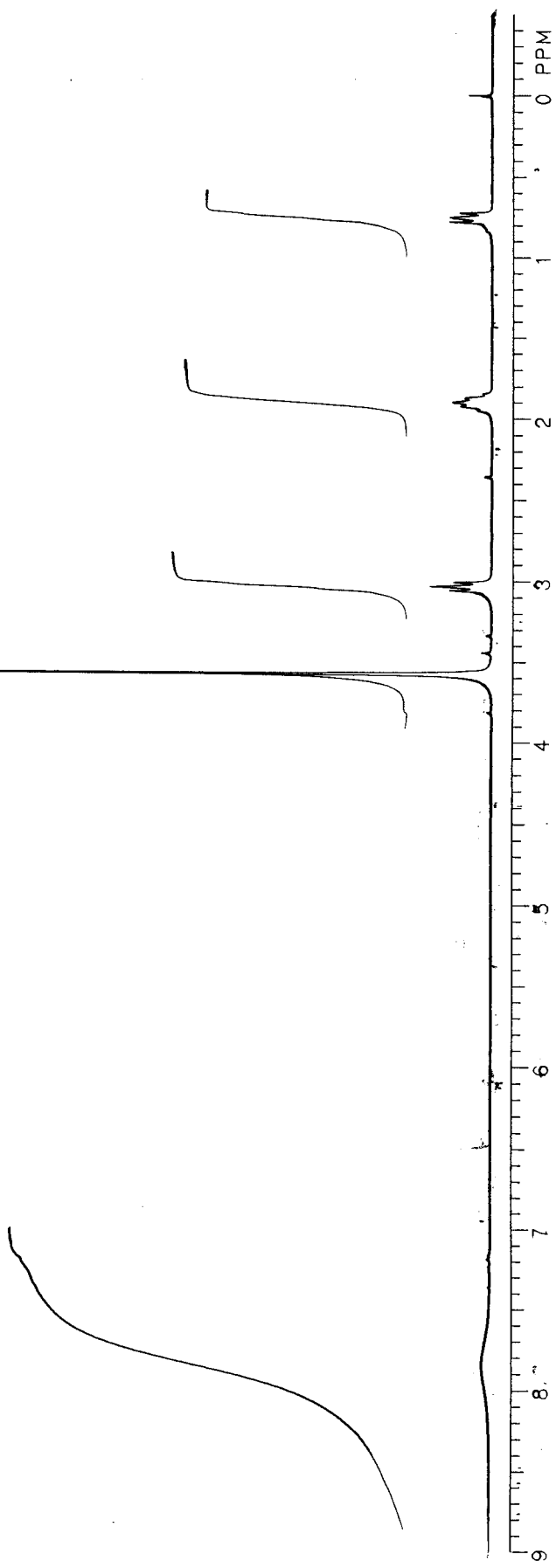


RB-99

EXP1 PULSE SEQUENCE: STD1H  
DATE 08-04-00  
SOLVENT CDCL3  
FILE H

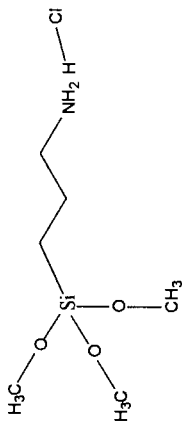


3-Aminopropyltrimethoxysilane hydrochloride



RB-99

EXP2 PULSE SEQUENCE: STD13C  
DATE 08-04-00  
SOLVENT CDCL3  
FILE C



3-Aminopropyltrimethoxysilane hydrochloride

