Toxicology of Pesticides

Dose/Response

Grvh#Whuplqrorj|

OG$_{83\#}$@#Ohwkdo#Grvh#83(#Whvw#Srsxodwlrq

OG$_{3\#}$@#Kljkhvw#Grvh#zlwk#qr#Ohwkdolw|#lq#wkh#Whvw#Srsxodwlrq

OG$_{433\#}$@#Ohwkdo#Grvh#433(#Whvw#Srsxodwlrq

OF$_{83\#}$@#Ohwkdo#Frqfhqwudwlrq#83(#Whvw#Srsxodwlrq

ORDHO#@Orzhvw#Revhuyhg#Dgyhuvh#Hiihfw#Ohyho

QRDHO#@#Qr#Revhuyhg#Dgyhuvh#Hiihfw#Ohyho

Dose/Response

H{srvxuh#Whup lqrorj|

Acute=Vkruw#whup /#kljk#grvh/#xvxdoo|#p hdvxuhg#lq#p lqxwhv#wr#gd|v/#fdq#eh#p xowlsoh#grvhv#z lwklq#d#vkruw#shulrg#+exuvw#krvh#rqd#d}lqskrv0p hwk|o#dssolfdwlrq#ru#d#E1W1#Frodqv#Frfnwdlo,1

SubChronic: Lqwhup hgldwh#whup /#p rghudwh#wr#orz #grvh/#p hdvxuhg#lq#z hhnv#wr#p rqwkv#+h{srvxuh#wr#d#vhdvrqdo#xvh#p dwhuldo/#h1j1#wuldglp hirq rq#judshv,#1

Chronic: Orqj#whup /#orz #grvh/#p hdvxuhg#lq#p rqwkv#wr#|hduv#+h{srvxuh#wr#d#frqvwdqw#xvh#p dwhuldo/#h1j1#vxoixu|o#ioxrulgh#iru krp h#ixp ljdwlrq,1

Pesticides
General Classes

Lqvhfwlflghv

41R ujdqrskrvskdwhv#R S,

51Fduedp dwhv

61Fkorulqdwhg#K|gurfduerqv#FKF,

71S|uhwkurlgv

81Elrorjlfdo v

91P hwdo v2Hdnp hqwdo v

:1Lqvhfw#Jurzwk#Jhjxodwruv#LJU,

Pesticides
General Classes

Ixqjlflghv

41Vxevwlwxwhg#ehq}hqhv#

51Wklrfduedp dwhv

61HEG F

71Skwkdodwhv

81P hwdov2Hdhp hqwv

91R wkhuv

Pesticides
General Classes

Urghqwlflghv

41Frxp dulqv#
51Lqgdqglrqhv
61P hwdovLqrujdqlfv
71Frqyxovdqw

Pesticides
General Classes

Khuelflghv

41Fkorurskhqr{|#

51Qlwur0skhqrdf2fuhvrdf

61Gls|ulg|ov

71Wuld}lqhv

81Wklrfduedp dwhv

91Skrvskrqdwhv

:1Rwkhuv

Pesticides

General Classes

Ixp ljdqw

41P hwk|d#eurp lgh

51Vxoixu|d#ioxrulgh

61Fkorurslfulq

71Dfurohlq

81Skrvsklqh

914/60glfkorursurshqh

:1K|gurjhq#f|dqlgh

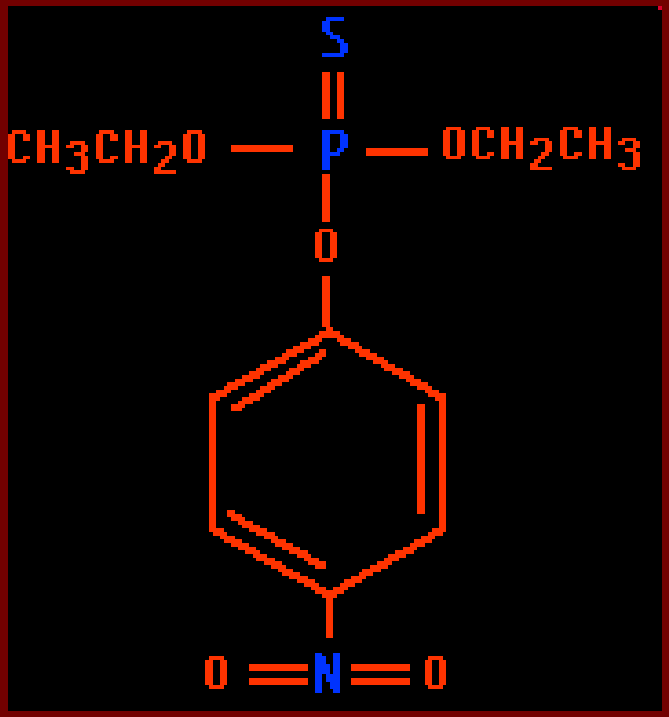
;1Irup doghk|gh

Pesticides
Insecticide Toxicology

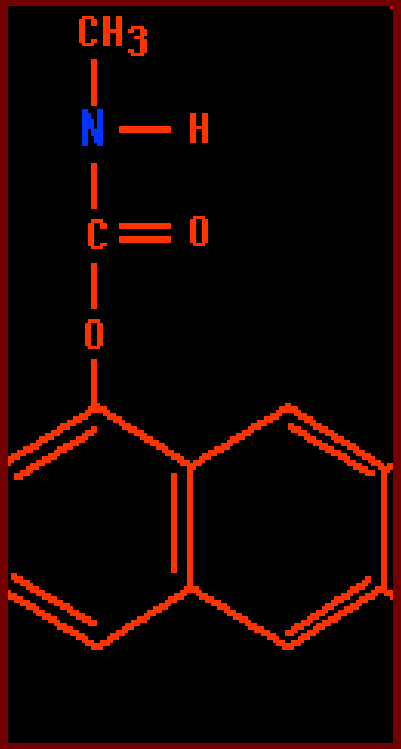
R S	F duedp dwhv
Sdudwklrq	Sursr{xu
D}lqskrv0p hwk|o	P hwkrp |o
G lforuyrv	F duerixudq
Q dohg	Doglfdue
Ihqdp lskrv	F duedu|o
P hwklgdwklrq	Ihqr{|fdue
R {|ghp hwrq0p hwk|o	Wklrglfdue
p dodwklrq	R {dp |o

Pesticides

OPs and Carbamates



Parathion



Carbaryl

Pesticides
OPs and Carbamates

Erwk#lqklelw#dfhw|ofkrdqhvwhudvh +DFkH,>#fduedp dwhvgr#vr#
uhyhuvleo|1

R {rqvri#R Svwhqg#wr#eh#p ruh#wr{lf#p dodwklrq#yvp dor{rq,

R Svjhqhudoo|#duh#p ruh#hdvlo|#devruehg#wkurxjk#wkh#vnlq#wkdq#
fduedp dwhv+vdp h#lv#wuxh#ri#HF#irup xodwlrqv,1

Fdq#frp h#lq#ydulrxv#irup xodwlrqv#z lwk#ydulrxv#vroyhqwv1

Wr{lflw|#ydulhv1

V|p swrp v=#K hdgdfkh/#qdxvhd/#yrp lwlqj/#z hdnqhvv/#k|shuvhfuhwlrq/#
wz lwfklqj/#gldukhd/#vnl}xuhv/#OR F/#sxqp rqdu|#hghp d1

DFkH lqklelwlrq#fdq#eh#p hdvxuhg/#vr#fdq#xulqdu|#p hwderdwhv1

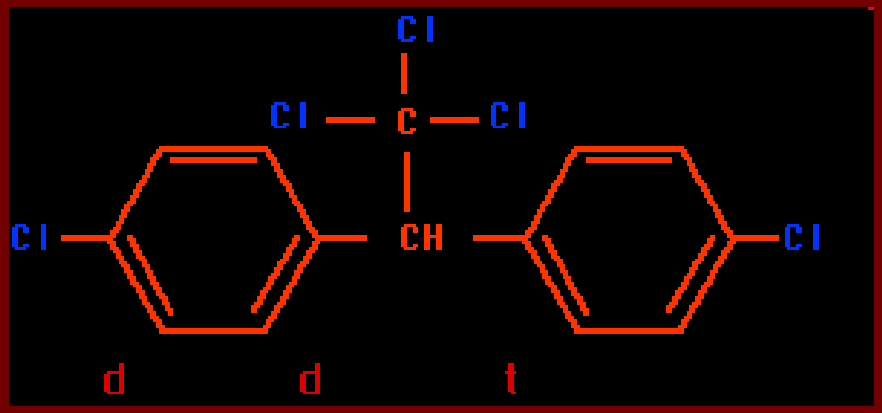
Pesticides
CHCs

glfkorur glskhq|o wilfkorurhwkdqh	fkorugdqh	hqgulq
glhqrfkoru	khswdfkoru	p hwkr{|fkoru
fkorurehq}lodwh	ehq}hqh# kh{dfkorulgh	fkorurghfrqh
p luh{	dqgdqh	glhogulq
glfriro	wr{dskhqh	hqgrvxoidq

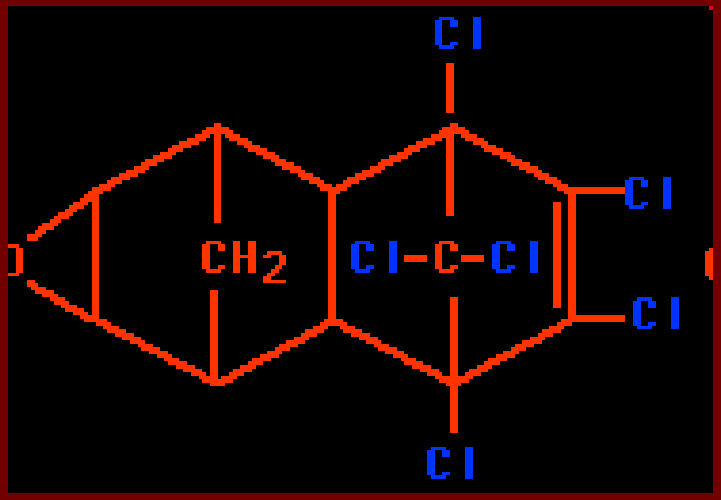
Uhg @ #fdqfhohng

Pesticides

CHCs



DDT



Dieldrin

Pesticides
CHCs

P rw#FK Fvz klfk#whqghg#wr#dslg#wrudjh#kdyh#ehhq#fdqfhohg1

Uhp dlqlqj#FK Fvxvxdoo|#udslgo|#p hwderd}hg#dqg#h{fuhwhg1#

Olqgdqh/#wkh#f|forglhqhvdqg#hqgrvxoidq fdq#eh#ghup doo|
devrueh g1#G G W#lv#yhu|#srruo|#devrueh g#wkurxjk#vnlq1

P rw#ri#wkh#kljko|#wr{lf#FK Fvduh#fdqfhohg#lq#XVD1

V|p swrp v=#Khdgdfkh/#gl}}lqhvv/#qdxvhd/#yrp lwqj/#wuhp ru/#
k|shuhwkhvld2sduhwkhvld/#frqyxovlrqv/#frp d/#ghdwk1

Eorrg#bhyhov#ri#FK Fvdqg#p hwderdwhv#fdq#eh#p hdvxuhg1

Pesticides

Pyrethroids

Dochwkulq	Elihqwkulq	Flvphwkulq
F|icxwkulq	F|shuphwkulq	Ghowdphwkulq
Glphwkulq	Hvihqydohudwh	Ihqydohudwh
Icxf|wkulqdwh	Icxydolqdwh	Shuphwkulq
Uhvphwkulq	Whwudphwkulq	Wudorphwkulq

Gr#\|rx#qrwlfh#d#wuhqg#lq#wkh#qrphqfodwxuhB

Pesticides
Pyrethroids

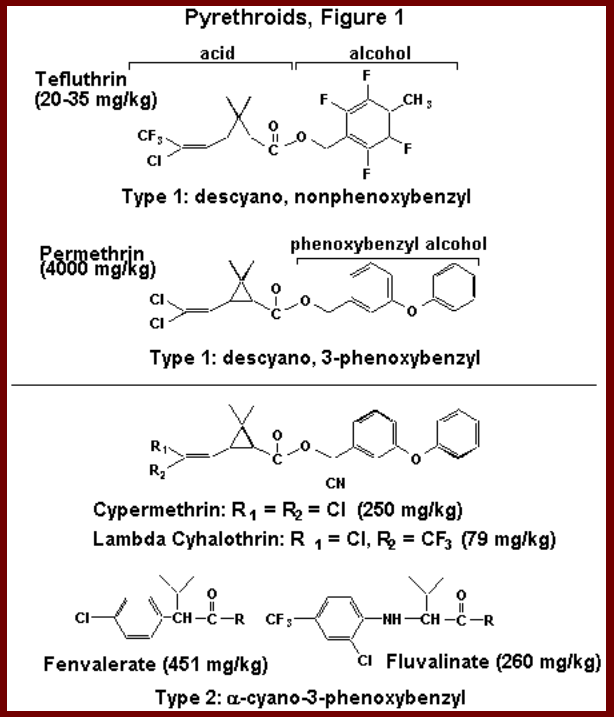
V|qwkhwlf#yhuvlrqv#ri#s|uhwkulqv+iurp #fku|vdqwkhp xp v,1

G hup dc#dqg#lqkdodwlrq#wr{lflw|#uhodwlyhc|#
orz 1

Lqjhvwlrq#urxwh#p ruh#surechp dwlf1

K ljk#grvhv#fdq#fdxvh#lqfrruglqdwlrq/#
wuhp ru/#vddydwlrq/#yrp lwlqj#dqg#
frqyxovlrqv1

Dochuj|0dnh#uhdfwlrqv#fdq#rffxu/#Šfuhhs|0
fudz c|õ vnlq#vhqvdwlrq#+sduhvwkhvld,/#
hvshfldo|#lq#ihqydohudwh/#f|shup hwkulq/#dqg#
ioxyddqdwh1



Pesticides
Fungicides

Prw#ixqjlflghv#duh#xvxdoo|#ghup dd#luulwdqw/#h|h#luulwdqw/#
uhvsludwru|#luulwdqw/#dqg#srwhqwldo#vhqvlwl}huv1

Wkh#wklrfduedp dwh ixqjlflghv#p d|#kdyh#dq#Dqwdexvh uhdfwlrq1

Wkh#p hwdodf#p dwhuldov#frsshu,#fdq#eh#fruurvlyh#wr#h|hv#dqg#
p xfxv#p hp eudqhv1

Rujdqrp hwdodfv+Fx/#Kj/#Vq/#Fg,#dovr#fdxvh#v|wwhp lf#looqhvvhv>#
p rvw#duh#qr#orqjhu#uhjlwwhuhg#lq#XVD1#

V|p swrp v#ydu|1#Kj#rujdqrp hwdodfv duh#h{wuhp hoo|#kd}dugrxv1

Vxoixu#fdq#fdxvh#p log#wr#p rghudwh#ghup dwlwlv1

Pesticides
Rodenticides

Z duidulq/#eurp dglrorqh/#eurglidfrxp /#fkorurskdflqrqh/#hwf1#duh#dos
khp ruukdjlf#djhqwv1#Z duidulq#lv#p hglfdo|#suhvfulehg#dv#frxp dglq1

Wkdodxp #vxoidwh#lq#qrq0hwkdo#grvhv#fdq#fdxvh#sdlqixo#qhxursdwklhv/#
vhl}xuhv/#ghp hqwld#dqg#frp d1#Q rw#uhjlwhuhg#lq#X VD1

] lqf#skrvsklgh#gxw#lqkdodwlrq#fdxvhv#sxoo rqdu|#hghp d1#Lqjhwhg#
p dwhuldo#z lo#hyroyh#skrvsklqh#jdv#lq#wkh#jxw1

\hoorz #skrvskrurxv#lv#kljko|#fruurvlyh#dqg#xqdydlodeoh#lq#wkh#X VD1

Frqyxovdqw lqfoxgh#43;3-/#fulp lglqh dqg#wu|fkqlqh1

-+ydup lqw#frodu#rqo|,

Pesticides
Herbicides

Fkorurskhqr{|p dwhuldo#duh#ghup dd#dqg#p xfrxv#p hp eudqh#
luulwdqw1#Ghup dd#devruswlrq#lv#orz1

Wkh#qlwur0fuhvrdf2skhqrdfvduh#yhu|#wr{lf#dqg#hdvlo|#devruehg#
wkurxjk#wkh#vnlq1#Fdxvhv#|hoorz#glvfrorudwlrq#ri#vnlq2h|hv2kdlu1
Ghfrxsohv#r{lgdwlyh#skrvskru|odwlrq>#xvhg#dv#Šglhw#sloõ+4<66,1

Gls|ulg|osdudtxdwlv#d#vhyhuh#vnlq2h|h#luulwdqw#dqg#lv#xvxdoo|#idwdo#
lq#hyhq#vp doo#53p d#ri#53(,#grvhv1#Gltxdwlv#d#qhxurorjlfdo#
wr{lfdqw1

Rqh#skrvskrqdwh irup xodwlrq#z dv#fruurvlyh#wr#wkh#h|hv/#qrw#iurp#
wkh#jo|skrvdwh/#exw#iurp#wkh#vxuidfwdqw1#Iw#z dv#uhirup xodwhg#wr#
uhp ryh#wkh#sureohp#p dwhuldo1#

Pesticides
Fumigants

Phwk|ceurp lgh#lv#skdvlqj#rxw#ri#xvh1#Juhdwhvw#xvh#lv#wlo#djulfxowxudo#frp p rglw|/#ilhog,/#z kln#wuxfwxudo#lv#gurssl qj1#Fdq#fdxvh#ghup dc#exuqv#li#wudsshg#djdlqw#wkh#erg|1#Iqkdodwlrq#fdq#fdxvh#sxqp rqdu|#hghp d#dqg#frqyxovlrqv1

Vxoixu|c#ioxrulgh#lv#luulwdwlqj#wr#p xfrxv#p hp eudqhv1#K dv#ehfrp h#p dmru#p dwhulc#iru#wuxfwxudc#xvh1

Fkorurslfulq#dqg#dfurohlq duh#wurqj#odfku|p dwruv#dqg#vhyhuhc|#luulwdwlqj1

Skrvsklqh#lv#dq#xsshu#uhvsludwru|#wudfw#luulwdqw#wkdw#fdq#fdxvh#qdxvhd/#wdfk|fdugld/#sduhvwkhvld1

Pesticides
Others

LJ Uvduh#xvxdoo|#ri#yhu|#orz#wr{lflw|

ŠR ujdqlfõ shvwlflghv#fdq#eh#kljko|#wr{lf#+qlfrwlqh,/#vhqvlwl}huv#
+s|uhwkuxp ,/#ghup dd#uulwdqw#+urwhqrqh,#ru#hvvhqwldoo|#kdup dnvv+EW,1

P l{lqj#Forur{ª z lwk#dp p rqld#lv#frqvlghuhg#d#ylrodwlrq#ri#odehd1#
P l{lqj#Sxuh{ª z lwk#dp p rqld#lv#frqvlghuhg#wxslg1

Duvhqlfdov#duh#wlo#kdyh#lqvhfwlflgdo#dqg#z rrg#suhvhuydwlyh#xvhv1

G HHW#GIHWK\O#WR OX DP IGH,#fdq#fdxvh#ghup dwlwlv#lq#wkh#dqwhfxelwdo
dqg#srsdwhdoirvvdh1

Vxjdu#lv#d#uhjlwhuhg#shvwlflgh#lq#Fddiruqld#Uhj1&#6<;670833350DD,

Vr#lv#vdo#Uhj1&#:4<;90633340DD#,#