Table 302-a: Recovery of Chemicals Through Method 302 (E1-E3 + DG1-DG19)
(acetone extraction, partitioning or Hydromatrix removal of water, GLC determination with various columns and detectors)

Chemical	Recovery[1]	Notes[2]
(4-chlorophenyl)-urea	NR	
1,2,4,5-tetrachloro-3-(methylthio)benzene	R	
1,2,4-triazole	V	N detector required.
2,3,5-trimethacarb	C	N detector required.
2,4,5-trichloro-alpha-methylbenzenemethanol	R	
2,4-dichloro-6-nitrobenzenamine	C (110%)	n=1
2,6-dichlorobenzamide	C	
2-chloroethyl myristate	C	
2-methoxy-3,5,6-trichloropyridine	C	Low temperature column recommended.
3,4,5-trimethacarb	C	N detector required.
3,4-dichloroaniline	V (44-84%)	
3,5-dichloroaniline	S (15-62%)	
3-(3,4-dichlorophenyl)-1-methoxyurea	R	GLC not reliable for quantitation.
3-carboxy-5-ethoxy-1,2,4-thiadiazole	NR	
3-chloro-5-methyl-4-nitro-1H-pyrazole	C	OV-101 peak tails severely.
3-ketocarbofuran	S (0-150%)	
3-methyl-4-nitrophenol	V (65-153%)	Interferences from sample extract may have caused variable results.
4'-hydroxy bifenthrin	C	High temperature GLC column required.
4-(dichloroacetyl)-1-oxa-4-azapiro[4.5]decane	C	Low level (0.05 ppm) fortification in corn grain obscured by matrix.
4-(phenylamino)phenol	C	
4-chlorobenzenamine	S (23-43%)	
4-chlorophenoxyaniline	S (10-29%)	Poor EC detector sensitivity; halogen-selective detector required.
6-benzyladenine	C	N detector required.
acephate	C	Wide bore or DEGS column required.
acetochlor	C	
acrinathrin	V (80-136%)	

[1] Codes: C: complete (>80%); P: partial (50-80%); S: small (<50%); V: variable (approximate percentage when known); R: recovered but no quantitative information available; NR: not recovered.

[2] Notes assume that extract is examined by GLC with columns at 200° C and, at a minimum, halogen-selective detector (DG3 or 16) and phosphorus-selective detectors (DG2 or 14 or 19). Notes indicate those chemicals that can be determined only by use of columns, temperatures, and/or detectors other than the minimal ones.

Table 302-a: Recovery Through 302 (E1-E3 + DG1-DG19)

Chemical	Recovery[1]	Notes[2]
alachlor	C	
aldrin	C	
allidochlor	C	Low temperature DEGS column used.
alpha-cypermethrin	C	
ametryn	C	N or S detector required.
aminocarb	C	N detector required.
amitraz	S (0-70%)	N detector, high temperature column required.
anilazine	V	GLC response variable.
aramite	C	
atrazine	C	
azinphos-ethyl	C	
azinphos-methyl	C	DEGS column unsuitable.
azinphos-methyl oxygen analog	C	
bendiocarb	C	N detector required.
benfluralin	C	
benodanil	C	
benoxacor	C	
bensulide	C	Results may be variable with certain GLC systems.
benzoylprop-ethyl	P (79%)	
BF 490-1	C	
BF 490-2	C	
BF 490-9	C	
BHC, alpha-	C	
BHC, beta-	C	
BHC, delta-	C	
bifenox	C	
bifenthrin	V (66-133%)	
binapacryl	C	N detector required.
biphenyl	C	FID required.
bitertanol	C	GLC with high temperature column, N/P detector required.
bromacil	C	
bromophos	C	
bromophos-ethyl	C	

Table 302-a: Recovery Through 302 (E1-E3 + DG1-DG19)

Chemical	Recovery[1]	Notes[2]
bromopropylate	C	
bromuconazole	C	
BTS 27919	C	N detector required.
Bulan	C	
bupirimate	C	N or S detector required.
butachlor	C	
butralin	V (77-90%)	N detector required.
butylate	V (73-99%)	N detector required.
cadusafos	C	
captafol	C	
captan	C	
carbaryl	C	N detector required for GLC determination; GLC not the method of choice.
carbetamide	C	N detector required.
carbofuran	C	N detector required for GLC determination; GLC not the method of choice.
carbophenothion	C	
carbophenothion oxygen analog	C	
carbophenothion sulfone	C	
carbosulfan	P (47-75%)	N or S detector required.
carboxin	C	N or S detector required.
CGA 100255	S (37-146%)	N detector required, but response is poor.
CGA 118244	V	
CGA 14128	C	
CGA 150829	V (40-111%)	N detector required; wide bore or DEGS column recommended.
CGA 171683	C	N detector, wide bore or DEGS column required.
CGA 37734	C	N detector required but response variable.
CGA 91305	V	
CGA 94689A	V (44-108%)	N detector required.
CGA 94689B	S (39-94%)	N detector required, but response varies widely with different columns.
CGA-232449	C	Needs N detector.
chlorbenside	C	
chlorbromuron	V (73-100%)	

Table 302-a: Recovery Through 302 (E1-E3 + DG1-DG19)

Chemical	Recovery[1]	Notes[2]
chlorbufam	C	
chlordane	C	
chlordane, cis-	C	
chlordane, trans-	C	
chlordimeform hydrochloride	P (80%)	
chlorethoxyfos	V (64-119%)	Recoveries performed with electron capture detector.
chlorfenapyr	P (73-82%)	
chlorfenvinphos, alpha-	C	
chlorfenvinphos, beta-	C	
chlorflurecol methyl ester	C	
chlorimuron ethyl ester	P (69-70%)	
chlormephos	C	Low temperature column required.
chlornitrofen	C (80%)	
chlorobenzilate	C	
chloroneb	C	Low temperature column required.
chloropropylate	P (64%)	
chlorothalonil	S	Recovery may be 0%.
chlorothalonil trichloro impurity	R	
chloroxuron	C	
chlorpropham	C	
chlorpyrifos	C	
chlorpyrifos oxygen analog	C	Wide bore or DEGS column recommended.
chlorpyrifos-methyl	C	
chlorthiophos	C	
chlorthiophos oxygen analog	C	
chlorthiophos sulfone	C	
chlorthiophos sulfoxide	C	
clodinafop-propargyl	V	Recovery test yielded very high recoveries (>200%) from wheat.
clofentezine	R	Degrades on GLC in presence of extract.
clomazone	C	
cloquintocet-mexyl	V (57-137%)	
coumaphos	C	

Table 302-a: Recovery Through 302 (E1-E3 + DG1-DG19)

Chemical	Recovery[1]	Notes[2]
coumaphos oxygen analog	C	
CP 51214	C	
crotoxyphos	C	
crufomate	C	
cyanazine	C	
cyanofenphos	C	
cyanophos	C	
cycloate	C	N or S detector required.
cycluron	C	N detector required.
cyfluthrin	C	High temperature column required.
cymoxanil	V (70-107%)	N detector required; GLC rrts and responses variable.
cypermethrin	C	
cyprazine	C	
cyproconazole	C	
cyprodinil	C	Needs N detector
cyromazine	S (16-20%)	
dazomet	S (<10%)	
DCPA	C	
DDE, o,p'-	C	
DDE, p,p'-	C	
DDT, o,p'-	C	
DDT, p,p'-	C	
deltamethrin	C	
demeton-O	C	
demeton-O sulfone	C	
demeton-O sulfoxide	C	
demeton-S	C	
demeton-S sulfone	C	Wide bore or DEGS column recommended.
demeton-S sulfoxide	C	Wide bore or DEGS column required.
des N-isopropyl isofenphos	C	
desisopropyl iprodione	P (67-84%)	
desmethyl norflurazon	V (63-200%)	
di-allate	C	

Table 302-a: Recovery Through 302 (E1-E3 + DG1-DG19)

Chemical	Recovery[1]	Notes[2]
dialifor	C	
diazinon	C	
diazinon oxygen analog	C (80%)	
dichlobenil	C	Low temperature column required.
dichlofenthion	C	
dichlofluanid	C	
dichlone	P (55%)	May break down.
dichlorvos	C	Low temperature column required; wide bore or DEGS recommended.
diclobutrazol	C	Wide bore column recommended.
diclofop-methyl	C	
dicloran	C	
dicofol, o,p'-	C	
dicofol, p,p'-	C	
dicrotophos	C	Wide bore or DEGS column required.
dieldrin	C	
diethatyl-ethyl	C	
difenoxuron	R	79-95% recovered at 1 and 5.5 ppm, but subject to interferences.
dimethachlor	C	
dimethametryn	C	N or S detector required.
dimethipin	C	
dimethoate	C	Wide bore or DEGS column recommended.
dimethomorph (prop)	V (87-133%)	High temperature column required.
dinitramine	C	N detector required.
dinobuton	C	
dinocap	C	N detector required.
dioxabenzofos	C	
dioxacarb	C	N detector required; used Megabore Carbowax column.
dioxathion	V (72-94%)	
diphenamid	V (57-155%)	N detector required.
diphenyl 2-ethylhexyl phosphate	C	mean recovery 104.2%, n=15
diphenylamine	C	N detector required.
disulfoton	C	

Table 302-a: Recovery Through 302 (E1-E3 + DG1-DG19)

Chemical	Recovery[1]	Notes[2]
disulfoton sulfone	C	
disulfoton sulfoxide	C	Wide bore or DEGS column required.
dithianon	NR	Breaks down in presence of extract.
diuron	C	Low temperature column required.
edifenphos	C	High recovery (113-121%) reported.
endosulfan I	C	
endosulfan II	C	
endosulfan sulfate	C	
endrin	C	
endrin aldehyde	C	
EPN	C	
esfenvalerate	C	High temperature column required.
etaconazole	C	Wide bore column recommended.
ethalfluralin	C	
ethephon	NR	
ethiofencarb	C	N or S detector required; responses variable.
ethiolate	C	Low temperature column, N or S detector required.
ethion	C	
ethion oxygen analog	C	
ethirimol	P (73%)	
ethofumesate	C	S selective detector required.
ethoprop	C	
ethoxyquin	C	N detector required.
ethyl p-toluene sulfonamide	C	N or S detector required.
ethylenethiourea	S (0-48%)	Short, low temperature DEGS or wide bore column, N or S detector required.
etridiazole	C	Low temperature column recommended.
etrimfos	C	
etrimfos oxygen analog	C	
famphur	C	
famphur oxygen analog	C	Quantitation affected by poor GLC.
fenamiphos	C	
fenamiphos sulfone	C	

Table 302-a: Recovery Through 302 (E1-E3 + DG1-DG19)

Chemical	Recovery[1]	Notes[2]
fenamiphos sulfoxide	C	
fenarimol	C	
fenarimol metabolite B	NR	
fenarimol metabolite C	S (6%)	
fenbuconazole	C	
fenfuram	C	
fenitrothion	C	
fenitrothion oxygen analog	C	
fenoxaprop ethyl ester	S (0-40%)	
fenoxycarb	C	N detector required.
fenpropimorph	C	N detector required.
fensulfothion	C	
fensulfothion oxygen analog	C	
fensulfothion sulfone	C	
fenthion	C	
fenthion oxygen analog	C	
fenthion oxygen analog sulfoxide	C	
fenthion sulfone	C	
fenvalerate	C	High temperature column required.
fipronil	S (0-72%)	Corn forage sample interfered with determination.
flamprop-M-isopropyl	C	
flamprop-methyl	C	
fluazifop butyl ester	C (78-112%)	
fluchloralin	C	
flucythrinate	C	High temperature column required.
fludioxonil	V (49-121%)	Requires N detector.
flusilazole	C	Wide bore column recommended.
fluvalinate	C	High temperature column required.
FOE 5043	C	
folpet	C	
fonofos	C	
fonofos oxygen analog	V (57-108%)	
formothion	C	

Table 302-a: Recovery Through 302 (E1-E3 + DG1-DG19)

Chemical	Recovery[1]	Notes[2]
fosthiazate	C	
fuberidazole	C	May break down in solution. Temp program separated from interference in tomato.
furilazole	C	
G-27550	C	N detector required.
Gardona	C	
heptachlor	C	
heptachlor epoxide	C	
heptenophos	C	
hexachlorobenzene	C	
hexaconazole	C	
hexazinone	P (57-76%)	N detector required; high temperature column may be needed.
imazalil	C	Wide bore column recommended.
imazamethabenz methyl ester	C	N detector required, though halogen-selective detector may respond.
IN-A3928	S (23-39%)	
IN-B2838	P (75-84%)	
IN-T3935	S (20%)	
IN-T3936	S (29-34%)	
IN-T3937	S (25%)	N detector required.
iprobenfos	C	
iprodione	C	
iprodione metabolite isomer	C	
isazofos	C	
isocarbamid	C	
isofenphos	C	
isofenphos oxygen analog	C	
isopropalin	C	N detector required.
isoprothiolane	C	
isoproturon	S (44-67%)	GLC poor; requires wide bore column; compound may degrade.
isoxaben	C	N detector required.
isoxaflutole	NR	Crop interference may have prevented measurement of recovery.

Table 302-a: Recovery Through 302 (E1-E3 + DG1-DG19)

Chemical	Recovery[1]	Notes[2]
jodfenphos	C	
kresoxim-methyl	P (73-89%)	
KWG 1323	C	
lambda-cyhalothrin	C	
lenacil	C	N detector required.
leptophos	C	
leptophos oxygen analog	C	
leptophos photoproduct	C	
lindane	C	
linuron	V (57-101%)	
malathion	C	
malathion oxygen analog	C	
MB 46513	C	
MB45950	S (0-35%)	
MB46136	S (0-19%)	
mecarbam	C	
mefluidide	R	123% recovered of 3 ppm added; subject to interference, poor GLC.
melamine	NR	
mephosfolan	C	
metalaxyl	C	N detector required but response variable.
metasystox thiol	C	
metazachlor	C	
methabenzthiazuron	C (85-86%)	
methamidophos	V	For complete recovery, use variation from PAM I 302 E5/E6
methidathion	C	
methiocarb	C	N or S detector required for GLC determination; GLC not the method of choice.
methiocarb sulfone	S	Some reports of no recovery; N or S detector required.
methiocarb sulfoxide	P (60-80%)	GLC not preferred, requires N or S detector, wide bore or DEGS column.
methoprotryne	C	Wide bore column recommended.
methoxychlor olefin	C	

Table 302-a: Recovery Through 302 (E1-E3 + DG1-DG19)

Chemical	Recovery[1]	Notes[2]
methoxychlor, p, p'-	C	
methyl 4-chloro-1H-indole-3-acetate	R	
metobromuron	C	
metolachlor	C	
metolcarb	C	N detector, wide bore, DEGS, or low temperature OV-17 column required.
metoxuron	V (73-110%)	Requires low temperature column.
metribuzin	V	N or S detector required.
metribuzin, deaminated diketo metabolite	NR	
metribuzin, deaminated metabolite	C	N or S detector required.
metribuzin, diketo metabolite	NR	
mevinphos, (E)-	C	Wide bore or DEGS column required for separation from (Z)-.
mevinphos, (Z)-	C	Wide bore or DEGS column required for separation from (E)-.
MGK 264	C	
mirex	P (71-83%)	
molinate	C	Recovery tested at 0.053 and 0.264 ppm.
monocrotophos	C	Response enhanced by co-extractives. Wide bore or DEGS column required.
monolinuron	C	
myclobutanil	C	Wide bore column recommended.
myclobutanil alcohol metabolite	S (30-55%)	Poor N/P detector sensitivity.
myclobutanil dihydroxy metabolite	NR	
N, N-diallyl dichloroacetamide	C	
naled	C	May break down to dichlorvos on GLC column. Wide bore or DEGS column required.
napropamide	C	N detector, wide bore or DEGS column required.
neburon	C	
nitralin	C	N or S detector required.
nitrapyrin	C	
nitrofen	C	
nitrofluorfen	C	
nitrothal-isopropyl	C	N detector required.
nonachlor, cis-	C	

Table 302-a: Recovery Through 302 (E1-E3 + DG1-DG19)

Chemical	Recovery[1]	Notes[2]
nonachlor, trans-	C	
norea	C	N detector required.
norflurazon	V (60-200%)	
nuarimol	C	
octachlor epoxide	C	
octhilinone	C	N or S detector required.
ofurace	C	
omethoate	C	Wide bore or DEGS column required.
ovex	C	
oxadiazon	C	
oxadixyl	C	N detector required.
oxamyl oxime metabolite	C	Lower temperature column needed to separate from coextractives.
oxycarboxin	R	Matrix enhancement of response causes high results.
oxydemeton-methyl	C	Wide bore or DEGS column required.
oxydemeton-methyl sulfone	C	Wide bore or DEGS column required; poor GLC makes quantitation questionable.
oxyfluorfen	C	Poor N/P detector sensitivity.
oxythioquinox	C	N or S detector required; wide bore or short DEGS column recommended.
paclobutrazol	C	Wide bore column recommended.
parathion	C	
parathion oxygen analog	C	
parathion-methyl	C	
PB-9	V (106-215%)	
pebulate	C	
penconazole	C	Wide bore column recommended.
pendimethalin	C	N detector required.
pentachloroaniline	C	
pentachlorobenzene	C	
pentachlorobenzonitrile	C	
pentachlorophenyl methyl ether	C	
pentachlorophenyl methyl sulfide	C	
permethrin, cis-	C	High temperature column recommended.

Table 302-a: Recovery Through 302 (E1-E3 + DG1-DG19)

Chemical	Recovery[1]	Notes[2]
permethrin, trans-	C	High temperature column recommended.
Perthane	C	
phenthoate	C	
phenylphenol, o-	C	FID required.
phorate	C	
phorate oxygen analog	C	
phorate oxygen analog sulfone	C	
phorate oxygen analog sulfoxide	C	GLC retention times and responses variable.
phorate sulfone	C	GLC variable.
phorate sulfoxide	C	GLC retention times and responses variable.
phosalone	C	
phosalone oxygen analog	C	Poor GLC detector sensitivity.
phosfolan	C	
phosmet	C	
phosphamidon	C	
phoxim	C	Low temperature column required; degrades at 200°.
phoxim oxygen analog	C	
piperophos	C	
pirimicarb	C	N detector required.
pirimiphos-ethyl	C	
pirimiphos-ethyl oxygen analog	C	
pirimiphos-methyl	C	
pretilachlor	C	
probenazole	C	N or S detector required; FPD-S more sensitive than N/P.
prochloraz	C	High temperature column required.
procyazine	C	
procymidone	C	
prodiamine	C	Recoveries of 0.5 and 1 ppm from apples: 110, 125%, respectively.
profenofos	C	
profluralin	V (40-90%)	
Prolan	P (58%)	

Table 302-a: Recovery Through 302 (E1-E3 + DG1-DG19)

Chemical	Recovery[1]	Notes[2]
promecarb	V	N detector required; GLC not determinative step of choice.
prometryn	C	N or S detector required.
pronamide	C	
propachlor	C	
propanil	C	
propargite	C	S detector required.
propazine	C	
propetamphos	C	
propham	C	N detector required; low temperature column recommended.
propiconazole	C	Wide bore column recommended.
propoxur	C	N detector required for GLC.
prothiofos	C	
prothoate	C	
PYPAC	V (144-162%)	Low temperature column, N detector required.
pyracarbolid	C	N detector required.
pyrazon	C	Wide bore column recommended.
pyrazophos	C	
pyridaphenthion	C	S detector is less sensitive than FPD or N/P.
pyrimethanil	C	
pyriproxyfen	C	N detector required.
quinalphos	C	
quintozene	C	
quizalofop ethyl ester	C	Wide bore column recommended.
RH-6467	S (0-17%)	
RH-9129	V (68-92%)	
RH-9130	P (48-71%)	
ronnel	C	
ronnel oxygen analog	C	
RPA202248	NR	
schradan	C	
SDS-67131	C	
simazine	C	

Table 302-a: Recovery Through 302 (E1-E3 + DG1-DG19)

Chemical	Recovery[1]	Notes[2]
simetryn	C	N or S detector required.
sulfallate	C	
sulfanilamide	NR	
sulfotep	C	Wide bore or DEGS column recommended.
Sulphenone	C	
sulprofos	C	
sulprofos oxygen analog sulfone	C	
sulprofos sulfone	C	
sulprofos sulfoxide	C	
TCMTB	C	
TDE, p,p'-	C	
TDE, p,p'-, olefin	C	
tebuconazole	C	
tecnazene	C	
tefluthrin	C	Recovery tested at 0.275 and 1.374 ppm.
TEPP	C	
terbacil	C	
terbufos	C	
terbufos oxygen analog	C	
terbufos oxygen analog sulfone	C	
terbufos sulfone	C	
terbumeton	C	Recoveries of 0.5 and 1 ppm from apples: about 120%.
terbuthylazine	C	
terbutryn	C	N or S detector required.
tetradifon	C	
tetramethrin	C	
tetrasul	C	
thiabendazole	C	N or S detector required for GC determination.
thiazopyr	C	Recovery at 0.5 ppm; interferences prevented measurement at 0.1 ppm.
thiobencarb	C	
thiometon	C	Degrades while standing in extract.
thionazin	C	

Table 302-a: Recovery Through 302 (E1-E3 + DG1-DG19)

Chemical	Recovery[1]	Notes[2]
THPI	C	N detector, wide bore or DEGS column required.
tolylfluanid	C	
toxaphene	C	
tralkoxydim	V (38-106%)	Recoveries of two OV-101 peaks are different from one another.
tralomethrin	C	
tri-allate	C	
triadimefon	C	Wide bore column recommended.
triadimenol	C	Wide bore column recommended.
triazamate	C	
triazophos	C	
tribufos	C	
trichlorfon	C	Often converts to dichlorvos on GLC column. Wide bore or DEGS column required.
tricyclazole	C	N or S detector required; wide bore column recommended.
tridiphane	C	
trietazine	C	Recovery tested at 0.11 and 0.55 ppm.
triflumizole	C	Wide bore column recommended.
trifluralin	C	
triflusulfuron methyl ester	V (67-106%)	
triphenyl phosphate	C	
tris(2-ethylhexyl) phosphate	C (68-112%)	mean recovery 97.6%, n=11
tris(beta-chloroethyl) phosphate	C	
tris(chloropropyl) phosphate	C	
Tycor	C	May break down in solution. Temp program separated from interference in tomato.
vamidothion sulfone	C	
vinclozolin	C	
vinclozolin metabolite B	C	Severely subject to influence of matrix; levels <1.0 ppm had very high recovery.
vinclozolin metabolite E	C	Severely subject to influence of matrix; levels <1.0 ppm had very high recovery.
vinclozolin metabolite F	R	Poor chromatography, influence of matrix prevent quantitation of recovery.
vinclozolin metabolite S	V (59-137%)	