



DETERMINATION OF DIOXINS IN OIL FROM SUNFLOWER SEEDS AND SUNFLOWER CAKE WITH NORMS OF EUROPEAN COMMUNITY

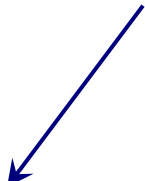
Vitaliy Chmil

**State enterprise "Medved's Institute
of Ecohygiene and Toxicology"**

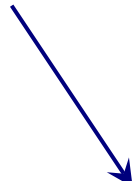
Kyiv, Ukraine,

E-mail: cvd@medved.kiev.ua

The contamination of sunflower oil with dioxins



**Use for the production of
the product
contaminated with
sunflower seeds**



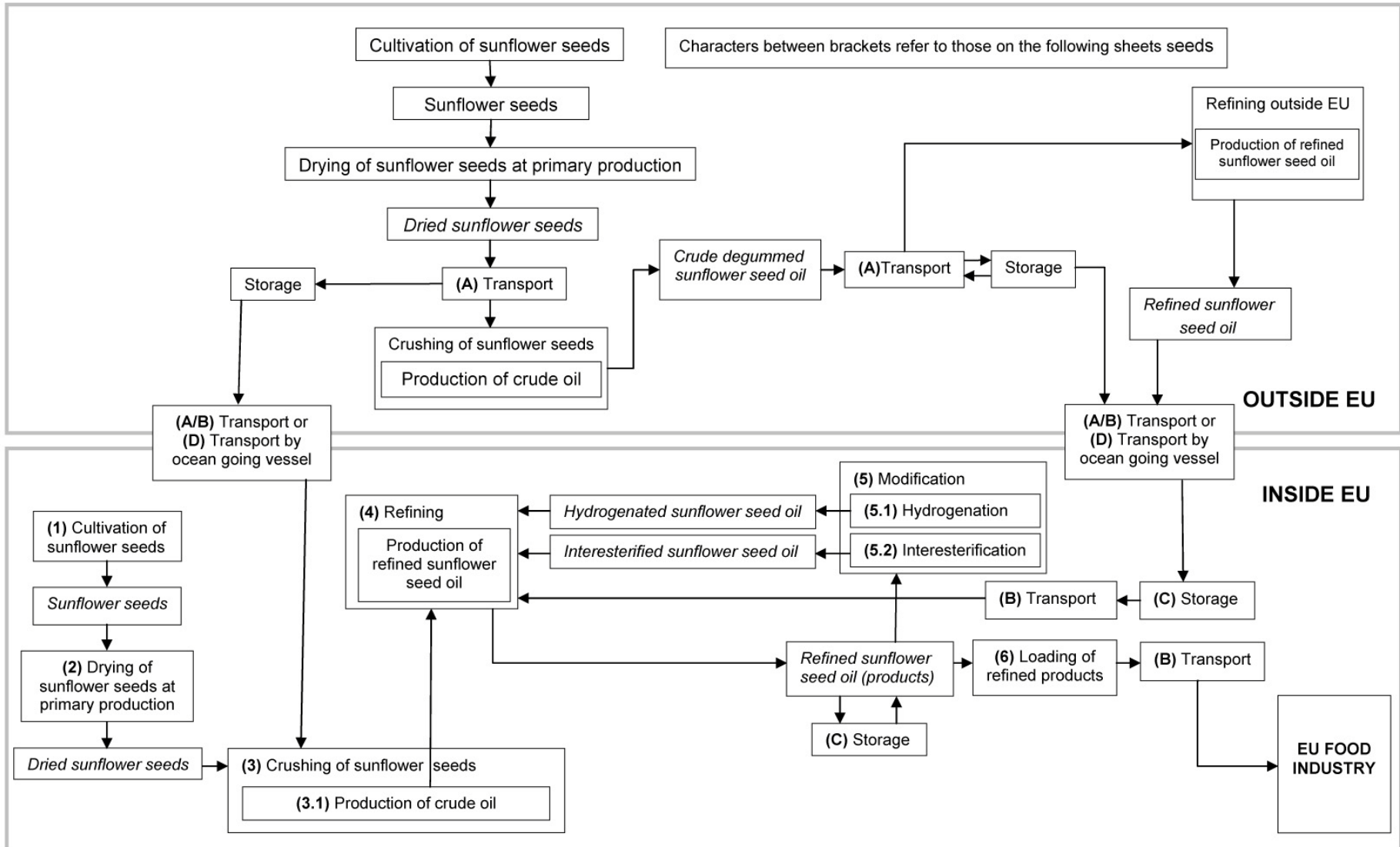
**The application for processing
of sunflower seed materials
and technologies, with or forming
these xenobiotics**

Internal Specification Bunge 03-21012008

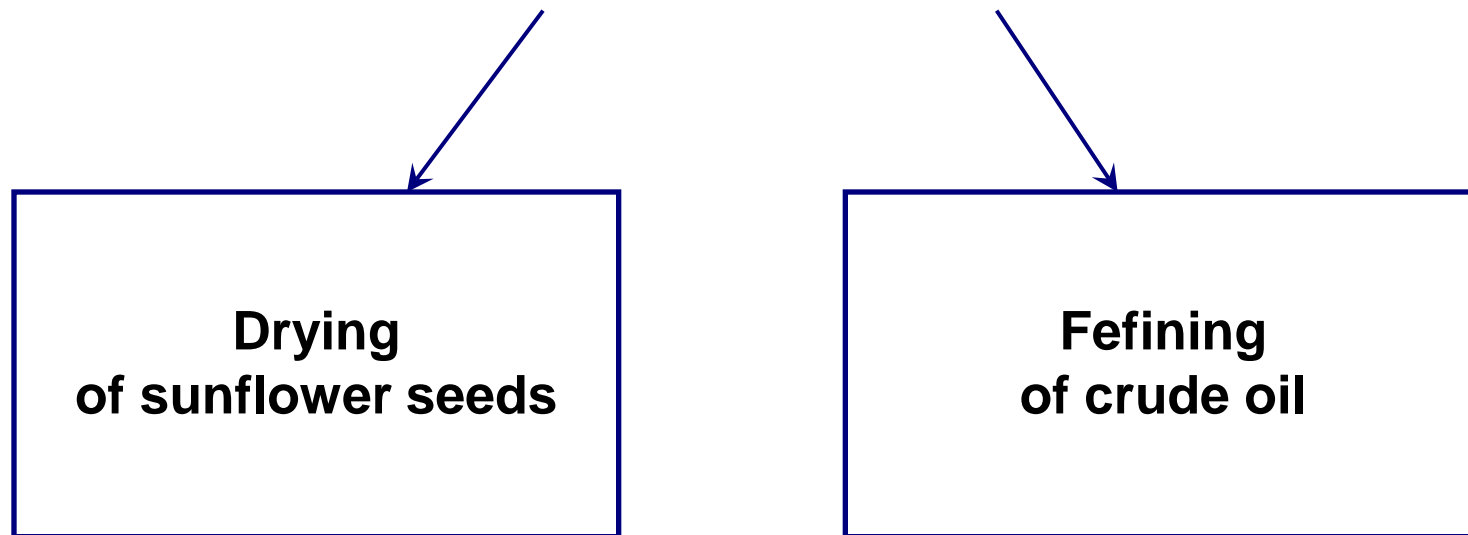
Refined Sunflower Oil

Characteristics	Unit	Target	Limit
Cu	mg/kg	0,01	0,05
Fe		0,1	0,5
Pb		0,1	0,1
Cd		0,02	0,02
Hg		0,01	0,02
As		0,01	0,05
Pesticide residues	mg/kg	LOD	MRL
Benzo(a)pyrene	µg/kg	1	2
Dioxin	WHO TEQ	LOD	1,5
PCB + PCDD/PCDF	pg/gr		
Mineral oil	mg/kg	LOD	50 (C10-C56)
Residues hexane	mg/kg	1	1

Flow chart of the production chain of sunflower seed products for food application in the EU



The contamination of sunflower oil with dioxins on stages of its production



Commission Regulation (EU) No 1259/2011 of 2 December 2011 Amending Regulation (EC) No 1881/2006 as regards maximum levels for dioxins, dioxin-like PCBs and non dioxin-like PCBs in foodstuffs


ANNEX

Section 5: Dioxins and PCBs

Maximum levels

Foodstuffs

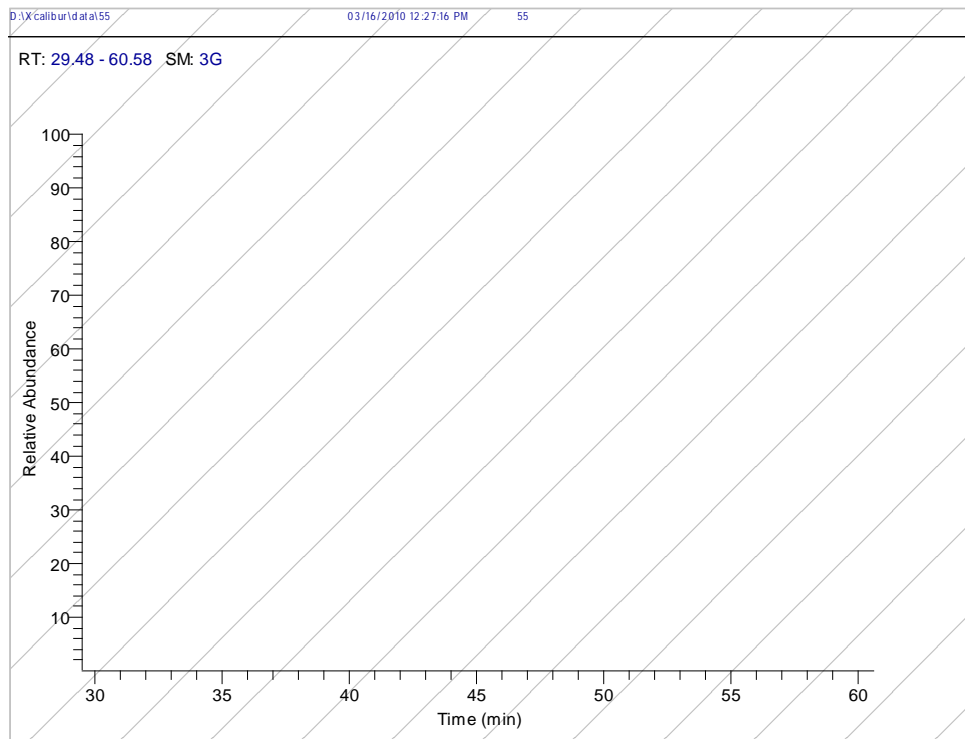
	Sum of dioxins (WHO-PCDD/F-TEQ)	Sum of dioxins and dioxin-like PCBs (WHO-PCDD/F-PCB-TEQ)	Sum of PCB28, PCB52, PCB101, PCB138, PCB153 and PCB180
Vegetable oils and fats	0,75 pg/g fat	1.25 pg/g fat	40 ng/g fat



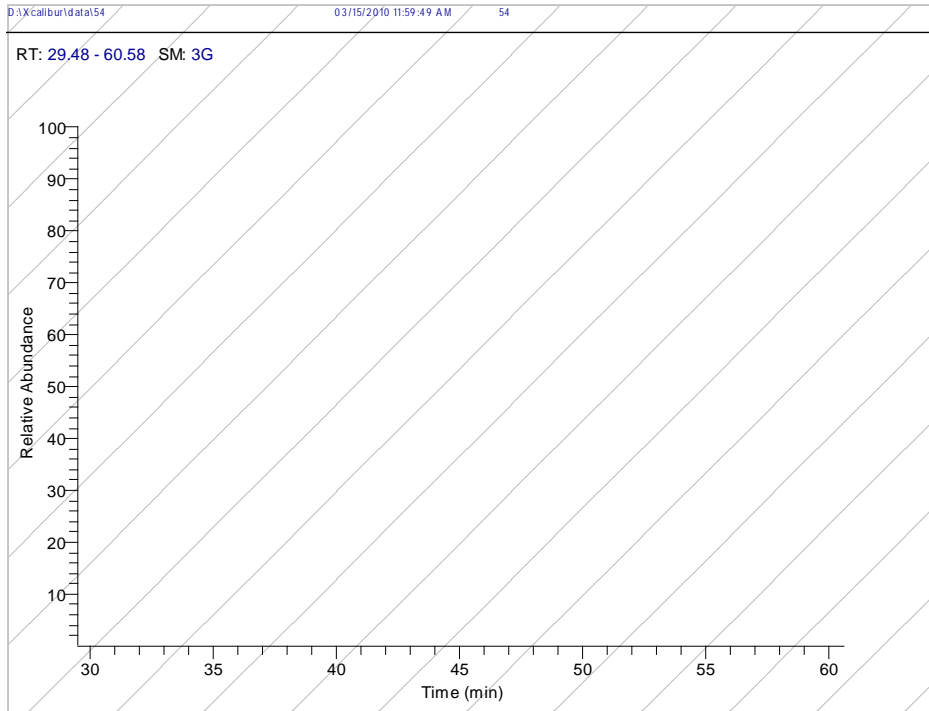
**COMMISSION DIRECTIVE 2006/13/EC
of 3 February 2006
on undesirable substances in animal feed
as regards dioxins and dioxin-like PCBs**

Undesirable substances	Product intended for animal feed	Maximum content to a feedingstuff with a moisture content of 12%
Dioxins (sum WHO-PCDD/F-TEQ)	Feed materials of plant origin with the exception of vegetable oils and their by-products	0,75 ng WHO-PCDD/F-TEQ/kg
Sum of dioxins and dioxin-like PCBs (WHO-PCDD/F+PCBs-TEQ)	Feed materials of plant origin with the exception of vegetable oils and their by-products	1,25 ng WHO-PCDD/F-TEQ/kg

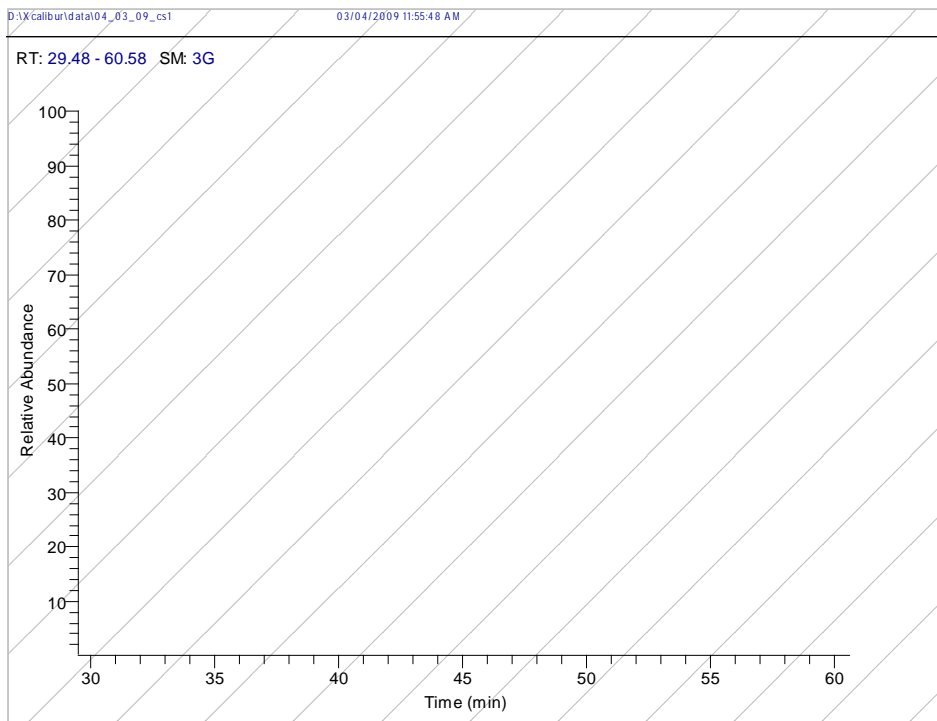
Template for TCDD to OCDD
and TCDD to OCDF



**Template for TCDD to OCDD
and TCDD to OCDF**



**Template for TCDD to OCDD
and TCDD to OCDF**



Content of dioxins in samples of sunflower oil

Sample, date of analysis	Sum of dioxins (WHO-PCDD/F-TEQ),ng/kg
21.05.2009	nd*
19.04.2011	nd
06.06.2011	nd
27.10.2011	0,25
20.01.2012	0,21
07.02.2012	nd
16.02.2012	0,15
19.03.2012	nd

* nd – not detected

Content of dioxins in samples of sunflower cake

Sample, date of analysis	Sum of dioxins (WHO-PCDD/F-TEQ),pg/g
21.05.2009	nd*
19.11.2009	nd
15.03.2010	nd
12.05.2010	nd
18.05.2010	nd
02.02.2011	nd
02.03.2011	nd
20.10.2011	nd
07.05.2012	nd

* nd – not detected

Content of dioxins in samples of soya oil

Sample, date of analysis	Sum of dioxins (WHO-PCDD/F-TEQ),ng/kg
30.05.2011	nd*
27.07.2011	0,1
14.09.2011	0,25
17.01.2012	nd
09.02.2012	0,13
15.03.2012	nd
19.03.2012	nd
23.04.2012	nd

* nd – not detected

CONCLUSION

The studies found that consumption of sunflower oil, sunflower cake and soya oil, produced in Ukraine, it is safe for humans and animals with respect to dioxins.

**THANK YOU
FOR ATTENTION!**