NRC FORM 7 (8-2010) 10 CFR 110

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR NRC EXPORT OR IMPORT LICENSE, AMENDMENT, OR RENEWAL

(See Instructions on Pages 4 and 5)

APPROVED BY OMB: NO. 3150-0027 EXPIRES: 08/31/2012

Estimated burden per response to comply with this mandatory collection request: 2.4 hours. This submittal is reviewed to ensure that the applicable statutory, regulatory, and policy considerations are satisfied. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0027), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

PART A. FOR NRC USE ONLY	☑ PUBLIC OR ☐ NON-PUBLIC	DATE RECEIVED FEB 22 2011 Rec'd JC
LICENSE NUMBER XMAT 416	DOCKET NUMBER 11005919	ADAMS ACCESSION NUMBER

PART B. TO BE COMPLETED FOR ALL LICENSES, AMENDMENTS, OR RENEWALS

(If more space is needed to complete any of the items, use Pages 3-4 first, and then attach additional sheets, if necessary.)

1. NAME AND ADDRESS OF APPLICANT/LICENSEE	1a. NAME OF APPLICANT'S CONTACT	1b. APPLICANT'S REFERENCE NUMBER
Sigma-Aldrich ~~Corp. and subsidiaries~~ Corporation 6000 North Teutonia Avenue Milwaukee, WI 53209 Per Jared Fenton 2/22/11	Jared Fenton	none
	1c. PHONE NUMBER (314) 286-8326	1d. FAX NUMBER (314) 286-8005
	1e. E-MAIL ADDRESS jared.fenton@sial.com	

2. TYPE OF ACTION REQUESTED *(Check One)*

☑ EXPORT (Parts B, C, E) ☐ IMPORT (Parts B, D, E) ☐ AMENDMENT/RENEWAL Existing License Number: _____

3. CONTRACT NUMBER(S)	4. FIRST SHIPMENT DATE	5. LAST SHIPMENT DATE	6. PROPOSED EXPIRATION DATE
none	05/01/2011	12/31/2014	12/31/2014

PART C. TO BE COMPLETED FOR EXPORT LICENSES, AMENDMENTS, OR RENEWALS

(If more space is needed to complete any of the items, use Pages 3-4 first, and then attach additional sheets, if necessary.)

7. NAME(S) / ADDRESS(ES) OF SUPPLIERS AND/OR OTHER PARTIES TO THE EXPORT	8. NAME(S) / ADDRESS(ES) OF INTERMEDIATE FOREIGN CONSIGNEE(S)	9. NAME(S) / ADDRESS(ES) OF ULTIMATE FOREIGN CONSIGNEE(S)
None	None	Please see foreign consignee information on Page 3
7a. FUNCTION(S) PERFORMED/SERVICE(S) PROVIDED Information on Page 3	8a. INTERMEDIATE USE(S) None	9a. ULTIMATE END USE(S) Information on Page 3

10. DESCRIPTION OF RADIOACTIVE MATERIALS, SEALED SOURCES, NUCLEAR FACILITIES, EQUIPMENT, OR COMPONENTS; FOR NUCLEAR EQUIPMENT INCLUDE TOTAL DOLLAR VALUE OF EQUIPMENT FOR EXPORT	10a. MAX TOTAL VOLUME / ELEMENT WGT (KG), OR TOTAL ACTIVITY (TBq)	10b. MAX ENRICHMENT OR WGT %	10c. MAX ISOTOPE WGT (KG)
Deuterium in the form of: 1. Deuterated compounds (see attached document for product examples) 2. Deuterium oxide 3. Deuterium gas	5,000 KG as deuterium	n/a	n/a

11. FOREIGN OBLIGATIONS (BY COUNTRY AND BY PERCENTAGE OF MAXIMUM TOTAL VOLUME)

Deuterium is of Canadian origin (100%)

Rec'd FEB 22 2011 JC

NRC FORM 7
(8-2010)
10 CFR 110

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR NRC EXPORT OR IMPORT LICENSE, AMENDMENT, OR RENEWAL (Continued)

LICENSE NUMBER	DOCKET NUMBER	ADAMS ACCESSION NUMBER	☑ PUBLIC OR ☐ NON-PUBLIC
XMAT416	11005919		

PART D. TO BE COMPLETED FOR IMPORT LICENSES, AMENDMENTS, OR RENEWALS

(If more space is needed to complete any of the items, use Pages 3-4 first, and then attach additional sheets, if necessary.)

12. NAME(S) / ADDRESS(ES) OF FOREIGN SUPPLIERS AND/OR OTHER PARTIES TO IMPORT	13. NAME(S) / ADDRESS(ES) OF INTERMEDIATE CONSIGNEE(S)	14. NAME(S) / ADDRESS(ES) OF ULTIMATE U. S. CONSIGNEE(S)
N/A	N/A	N/A
12a. NRC EXPORT LICENSE NUMBER(S) *(if applicable)*	13a. LICENSE NUMBER(S) / EXPIRATION DATE(S)	14a. LICENSE NUMBER(S) / EXPIRATION DATE(S)
N/A	N/A	N/A
	13b. INTERMEDIATE USE(S)	14b. ULTIMATE END USE(S)
	N/A	N/A

15. DESCRIPTION OF RADIOACTIVE MATERIALS, SEALED SOURCES, NUCLEAR FACILITIES	15a. MAX TOTAL VOLUME / ELEMENT WGT (KG), OR TOTAL ACTIVITY (TBq)	15b. MAX ENRICHMENT OR WGT %	15c. MAX ISOTOPE WGT (KG)
N/A	N/A	N/A	N/A

16. FOREIGN OBLIGATIONS (BY COUNTRY AND BY PERCENTAGE OF MAXIMUM TOTAL VOLUME)

N/A

PART E. TO BE COMPLETED FOR ALL LICENSES, AMENDMENTS, OR RENEWALS

17. ADDITIONAL INFORMATION PROVIDED ON PAGES 3, 4, AND/OR ON SEPARATE SHEETS?	☑ YES ☐ NO	17a. COPIES OF RECIPIENTS' AUTHORIZATIONS PROVIDED?	☐ YES ☑ NO

18. CERTIFICATION: I, the applicant's authorized official, hereby certify that this application is prepared in conformity with Title10, Code of Federal Regulations, and that all information provided is correct to the best of my knowledge.

18a. PRINT NAME AND TITLE OF AUTHORIZED OFFICIAL	18b. SIGNATURE -- AUTHORIZED OFFICIAL	18c. DATE
Jared Fenton Manager, Trade and Product Compliance Sigma-Aldrich		12/3/10

Rec'd
FEB 22 2011
JC

NRC FORM 7
(8-2010)
10 CFR 110

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR NRC EXPORT OR IMPORT LICENSE, AMENDMENT, OR RENEWAL (Continued)

LICENSE NUMBER	DOCKET NUMBER	ADAMS ACCESSION NUMBER	☑ PUBLIC OR ☐ NON-PUBLIC
XMAT416	11005919		

ADDITIONAL INFORMATION *(Reference applicable block numbers from page 1 and/or page 2 for each entry)*

ULTIMATE CONSIGNEE IN FOREIGN COUNTRY:
(for distribution into the medical, pharmaceutical, chemical, and industrial markets for non-nuclear end use)

SIGMA ALDRICH CHEMICAL CO LTD
THE OLD BRICKYARD
NEW ROAD GILLINGHAM
DORSET, SP8 4XT GREAT BRITAIN

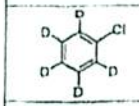
Box 7a. Function(s) Performed / Services(s) Provided

Sigma-Aldrich plans to sell the various deuterium compounds to the ultimate consignees above for further distribution into the UK medical, pharmaceutical, chemical, and industrial markets. The consignee's customers in the UK typically use these materials in relatively small quantities (i.e. in less than 1 kilogram) for scientific research. This type of research may include identification of chemicals in reaction pathways, metabolic studies or environmental analysis.

Most products are sold in prepackaged units (see attached Product Examples). No material is to be used in any activity related to isotope separation, heavy water production or in the fabrication of nuclear fuel.

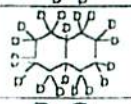
Rec'd
FEB 22 2011
JC

Product Examples

Structure	Name and CAS	Product Number	Packaging	Isotopic Purity	MW	Refractive Index	BP	Density	Each
	Chlorobenzene-d_5 [3114-55-4]	176605	1, 5 g in ampule	99 atom %D	117.00	n20/D 1.522(lit)	130-130.5 C (lit)	1.157 g/ml at 25C (lit)	1G = $50.00 5G = $126.00
$CDCl_3$	Chloroform-d [865-49-6]	151858	10, 50 g in glass bottle	99.96 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	10G = $26.60 50G = $87.70
$CDCl_3$	Chloroform-d [865-49-6]	453285	10 x 0.25 mL in ampule	99.96 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	1 pak = $23.00
$CDCl_3$	Chloroform-d [865-49-6]	236918	10 x 0.5 in ampule	99.96 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	1 pak = $33.20
$CDCl_3$	Chloroform-d [865-49-6]	444731	10 x 0.75 mL in ampule	99.96 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	1 pak = $40.40
$CDCl_3$	Chloroform-d [865-49-6]	423092	10 x 1mL in ampule	99.96 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	1 pak = $44.30
$CDCl_3$	Chloroform-d [865-49-6]	494275	10, 50 g in ampule	99.96 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	10G = $27.30 50G = $89.80
$CDCl_3$	Chloroform-d [865-49-6]	494283	10 x 0.75 mL in ampule	99.96 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	1 pak = $41.30
$CDCl_3$	Chloroform-d [865-49-6]	431915	10, 50 mL in ampule	99.96 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	10mL = $41.40 50mL = $142.50
$CDCl_3$	Chloroform-d [865-49-6]	151823	1, 1.5 kg in glass btl 150 g in Sure/Seal™ 250 g in glass btl 50, 100 g in glass btl	99.8 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	50 G = $18.90 100G = $32.50 150 G = $41.90 250 G = $71.40 1 KG = $262.50 1.5 KG = $317.00
$CDCl_3$	Chloroform-d [865-49-6]	522015	10 x 0.6 mL in ampule	99.8 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	1 pak = $19.90
$CDCl_3$	Chloroform-d [865-49-6]	441333	10 x 0.75 mL in ampule	99.8 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	1 pak = $21.00
$CDCl_3$	Chloroform-d [865-49-6]	236896	5x1, 10x1 mL in ampule	99.8 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	1 pak = $26.30
$CDCl_3$	Chloroform-d [865-49-6]	225789	100 g in glass btl 150 g in Sure/Seal™ 500 g in glass btl	99.8 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	100G = $33.10 150G = $42.90 500G = $138.00
$CDCl_3$	Chloroform-d [865-49-6]	423661	10 x 1 mL in ampule	99.8 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	1 pak = $26.90
$CDCl_3$	Chloroform-d [865-49-6]	612200	100 g in glass btl	99.8 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	100G = $33.60
$CDCl_3$	Chloroform-d [865-49-6]	434876	100 g in glass btl 150 g in Sure/Seal™ 500 g in glass btl	99.8 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	100G = $33.10 150G = $42.90 500G = $132.50

Rec'd
FEB 22 2011
JC

XMAT 416

$CDCl_3$	Chloroform-d [865-49-6]	151831	150 g in Sure/Seal™ 250 g in glass btl 50, 100g in glass btl	99.8 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	50G = $19.20 100G = $33.10 150G = $42.90 250G = $72.80
$CDCl_3$	Chloroform-d [865-49-6]	416754	100, 250 g in glass btl	99.8 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	100 G = $42.80 250 G = $94.30
$CDCl_3$	Chloroform-d [865-49-6]	530735	100, 250 g in glass btl	99.8 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	100G = $ 43.50 250G = $95.60
$CDCl_3$	Chloroform-d [865-49-6]	569569	5x1, 10x1 mL in ampule	99.8 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	
$CDCl_3$	Chloroform-d [865-49-6]	570699	50 g in glass btl	99.8 atom % D	120.38	n20/D 1.444(lit)	60.9 C (lit)	1.500 g/mL at 25C (lit)	50G = $27.80
	Cyclohexane-d_{12} [1735-17-7]	151866	1, 5, 10 g in ampule	99.6 atom % D	96.23	n20/D 1.421(lit)	80.7 C (lit)	0.893 g/mL at 25C (lit)	1 G = $31.20 5 G = $105.50 10 G = $175.00
	Cyclohexane-d_{12} [1735-17-7]	269735	10 x 1 mL in ampule	99.6 atom % D	96.23	n20/D 1.421(lit)	80.7 C (lit)	0.893 g/mL at 25C (lit)	1 pak = $188.00
	Decahydronaphthalene-d_{18} [28788-42-3]	217131	1 g in ampule	98.0 atom % D	156.40	n20/D 1.475(lit)	193 C (lit)	1.012 g/mL at 25C	1 G = $115.00
D_2O	Deuterium oxide [7789-20-0]	191701	10 g in ampule 50 g in glass btl	99.990 atom % D	20.03	n20/D 1.328(lit	101.4 C (lit)	1.107 g/mL at 25C (lit)	10 G = $77.10 50 G = $202.50
D_2O	Deuterium oxide [7789-20-0]	459366	10 x 0.5 mL in ampule	99.990 atom % D	20.03	n20/D 1.328(lit	101.4 C (lit)	1.107 g/mL at 25C (lit)	1 pak = $68.50
D_2O	Deuterium oxide [7789-20-0]	192341	10, 30 g in serum btl	99.96 atom % D	20.03	n20/D 1.328(lit	101.4 C (lit)	1.107 g/mL at 25C (lit)	10 G = $61.80 30 G = $160.50
D_2O	Deuterium oxide [7789-20-0]	151890	1, 4 kg in glass btl 10, 50 g in glass btl 125 g in Sure/Seal™ 20 kg in poly drum 250 g in glass btl	99.96 atom % D	20.03	n20/D 1.328(lit	101.4 C (lit)	1.107 g/mL at 25C (lit)	10 G = $36.60 50 G = $114.50 125 G = 251.50 250 G = $[illegible] 1 KG = $881.00 4 KG = $2,850.00
D_2O	Deuterium oxide [7789-20-0]	269786	10 x 0.5 mL in ampule	99.96 atom % D	20.03	n20/D 1.328(lit	101.4 C (lit)	1.107 g/mL at 25C (lit)	1 pak = $76.40
D_2O	Deuterium oxide [7789-20-0]	441368	10 x 0.75 mL in ampule	99.96 atom % D	20.03	n20/D 1.328(lit	101.4 C (lit)	1.107 g/mL at 25C (lit)	1 pak = $37.00
D—Br	Deuterium bromide [13536-59-9]	486515	5 L in steel cyl	99 atom % D	81.92	Vapor pressure = 334.7 psi (21C)	-67 C (lit)	2.71 (20C, vs air)	5 L = $422.00
DCl	Deuterium chloride [7698-05-7]	488682	5 L in steel cyl	99 atom % D	37.47	Vapor pressure = 613 psi (21.1C)	-85 C (lit)	1.3 (vs air)	5L = $281.50

Rec'd
FEB 22 2011
JC

XMAT416