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EXTENDED TO AUGUST 17, 2015
Return of Private Foundation

Form **990-PF**

Department of the Treasury
Internal Revenue Service

Do not enter social security numbers on this form as it may be made public.
Information about Form 990-PF and its separate instructions is at www.irs.gov/form990pf.

OMB No 1545-0052

2014

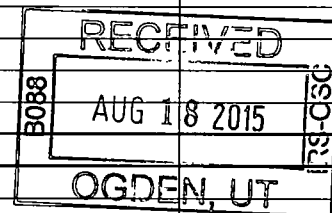
Open to Public Inspection

For calendar year 2014 or tax year beginning

, and ending

Name of foundation NICKEL PRODUCERS ENVIRONMENTAL RESEARCH ASSOCIATION, INC.		A Employer identification number 13-3070077
Number and street (or P O box number if mail is not delivered to street address) 2525 MERIDIAN PARKWAY	Room/suite 240	B Telephone number 919-595-1950
City or town, state or province, country, and ZIP or foreign postal code DURHAM, NC 27713		C If exemption application is pending, check here <input type="checkbox"/>
G Check all that apply: <input type="checkbox"/> Initial return <input type="checkbox"/> Final return <input type="checkbox"/> Address change <input type="checkbox"/> Initial return of a former public charity <input type="checkbox"/> Amended return <input type="checkbox"/> Name change		D 1. Foreign organizations, check here <input type="checkbox"/> 2. Foreign organizations meeting the 85% test, check here and attach computation <input type="checkbox"/>
H Check type of organization: <input checked="" type="checkbox"/> Section 501(c)(3) exempt private foundation <input type="checkbox"/> Section 4947(a)(1) nonexempt charitable trust <input type="checkbox"/> Other taxable private foundation		E If private foundation status was terminated under section 507(b)(1)(A), check here <input type="checkbox"/>
I Fair market value of all assets at end of year (from Part II, col (c), line 16) \$ 510,446.	J Accounting method: <input type="checkbox"/> Cash <input checked="" type="checkbox"/> Accrual <input type="checkbox"/> Other (specify) _____	F If the foundation is in a 60-month termination under section 507(b)(1)(B), check here <input type="checkbox"/>

Part I Analysis of Revenue and Expenses (The total of amounts in columns (b), (c), and (d) may not necessarily equal the amounts in column (a))		(a) Revenue and expenses per books	(b) Net investment income	(c) Adjusted net income	(d) Disbursements for charitable purposes (cash basis only)
1	Contributions, gifts, grants, etc., received	3,167,838.		N/A	
2	Check <input type="checkbox"/> if the foundation is not required to attach Sch B				
3	Interest on savings and temporary cash investments	179.	179.		STATEMENT 1
4	Dividends and interest from securities				
5a	Gross rents				
b	Net rental income or (loss)				
6a	Net gain or (loss) from sale of assets not on line 10				
b	Gross sales price for all assets on line 6a				
7	Capital gain net income (from Part IV, line 2)		0.		
8	Net short-term capital gain				
9	Income modifications				
10a	Gross sales less returns and allowances				
b	Less Cost of goods sold				
c	Gross profit or (loss)				
11	Other income				
12	Total Add lines 1 through 11	3,168,017.	179.		
13	Compensation of officers, directors, trustees, etc	526,095.	0.		0.
14	Other employee salaries and wages	1,095,287.	0.		0.
15	Pension plans, employee benefits	216,718.	0.		0.
16a	Legal fees				
b	Accounting fees STMT 2	11,935.	240.		0.
c	Other professional fees STMT 3	10.	0.		0.
17	Interest				
18	Taxes				
19	Depreciation and depletion	29,050.	0.		
20	Occupancy				
21	Travel, conferences, and meetings	201,543.	0.		0.
22	Printing and publications	171.	0.		0.
23	Other expenses STMT 4	198,143.	0.		0.
24	Total operating and administrative expenses. Add lines 13 through 23	2,278,952.	240.		0.
25	Contributions, gifts, grants paid	1,164,438.			1,116,570.
26	Total expenses and disbursements. Add lines 24 and 25	3,443,390.	240.		1,116,570.
27	Subtract line 26 from line 12:				
a	Excess of revenue over expenses and disbursements	<275,373.>			
b	Net investment income (if negative, enter -0-)		0.		
c	Adjusted net income (if negative, enter -0-)			N/A	



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Part II Balance Sheets

Attached schedules and amounts in the description column should be for end-of-year amounts only

		Beginning of year	End of year	
		(a) Book Value	(b) Book Value	(c) Fair Market Value
Assets	1 Cash - non-interest-bearing			
	2 Savings and temporary cash investments	623,762.	405,137.	405,137.
	3 Accounts receivable ▶ 38,551.			
	Less: allowance for doubtful accounts ▶		38,551.	38,551.
	4 Pledges receivable ▶			
	Less: allowance for doubtful accounts ▶			
	5 Grants receivable			
	6 Receivables due from officers, directors, trustees, and other disqualified persons			
	7 Other notes and loans receivable ▶			
	Less: allowance for doubtful accounts ▶			
	8 Inventories for sale or use			
	9 Prepaid expenses and deferred charges	18,257.	10,790.	10,790.
	10a Investments - U.S. and state government obligations			
	b Investments - corporate stock			
	c Investments - corporate bonds			
	11 Investments - land, buildings, and equipment basis ▶			
Less: accumulated depreciation ▶				
12 Investments - mortgage loans				
13 Investments - other				
14 Land, buildings, and equipment: basis ▶ 193,470.				
Less: accumulated depreciation STMT 5 ▶ 150,170.	54,500.	43,300.	43,300.	
15 Other assets (describe ▶ SECURITY DEPOSIT)	12,668.	12,668.	12,668.	
16 Total assets (to be completed by all filers - see the instructions. Also, see page 1, item I)	709,187.	510,446.	510,446.	
Liabilities	17 Accounts payable and accrued expenses	36,787.	54,507.	
	18 Grants payable	1,099,160.	1,124,794.	
	19 Deferred revenue			
	20 Loans from officers, directors, trustees, and other disqualified persons			
	21 Mortgages and other notes payable			
	22 Other liabilities (describe ▶ STATEMENT 6)	332,410.	365,688.	
	23 Total liabilities (add lines 17 through 22)	1,468,357.	1,544,989.	
Net Assets or Fund Balances	Foundations that follow SFAS 117, check here and complete lines 24 through 26 and lines 30 and 31 ▶ <input checked="" type="checkbox"/>			
	24 Unrestricted	<759,170.>	<1,034,543.>	
	25 Temporarily restricted			
	26 Permanently restricted			
	Foundations that do not follow SFAS 117, check here and complete lines 27 through 31. ▶ <input type="checkbox"/>			
	27 Capital stock, trust principal, or current funds			
	28 Paid-in or capital surplus, or land, bldg., and equipment fund			
	29 Retained earnings, accumulated income, endowment, or other funds			
	30 Total net assets or fund balances	<759,170.>	<1,034,543.>	
	31 Total liabilities and net assets/fund balances	709,187.	510,446.	

Part III Analysis of Changes in Net Assets or Fund Balances

1 Total net assets or fund balances at beginning of year - Part II, column (a), line 30 (must agree with end-of-year figure reported on prior year's return)	1	<759,170.>
2 Enter amount from Part I, line 27a	2	<275,373.>
3 Other increases not included in line 2 (itemize) ▶	3	0.
4 Add lines 1, 2, and 3	4	<1,034,543.>
5 Decreases not included in line 2 (itemize) ▶	5	0.
6 Total net assets or fund balances at end of year (line 4 minus line 5) - Part II, column (b), line 30	6	<1,034,543.>

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Part IV Capital Gains and Losses for Tax on Investment Income

(a) List and describe the kind(s) of property sold (e.g., real estate, 2-story brick warehouse; or common stock, 200 shs. MLC Co.)	(b) How acquired P - Purchase D - Donation	(c) Date acquired (mo., day, yr.)	(d) Date sold (mo., day, yr.)
1a			
b NONE			
c			
d			
e			

(e) Gross sales price	(f) Depreciation allowed (or allowable)	(g) Cost or other basis plus expense of sale	(h) Gain or (loss) (e) plus (f) minus (g)
a			
b			
c			
d			
e			

Complete only for assets showing gain in column (h) and owned by the foundation on 12/31/69			(l) Gains (Col. (h) gain minus col. (k), but not less than -0-) or Losses (from col. (h))
(i) F.M.V. as of 12/31/69	(j) Adjusted basis as of 12/31/69	(k) Excess of col. (i) over col. (j), if any	
a			
b			
c			
d			
e			

2 Capital gain net income or (net capital loss)	{ If gain, also enter in Part I, line 7 If (loss), enter -0- in Part I, line 7 }	2	
3 Net short-term capital gain or (loss) as defined in sections 1222(5) and (6): If gain, also enter in Part I, line 8, column (c). If (loss), enter -0- in Part I, line 8		3	

Part V Qualification Under Section 4940(e) for Reduced Tax on Net Investment Income

(For optional use by domestic private foundations subject to the section 4940(a) tax on net investment income.)

If section 4940(d)(2) applies, leave this part blank.

Was the foundation liable for the section 4942 tax on the distributable amount of any year in the base period? ☒ Yes ☐ No

If "Yes," the foundation does not qualify under section 4940(e). Do not complete this part.

1 Enter the appropriate amount in each column for each year; see the instructions before making any entries.

(a) Base period years Calendar year (or tax year beginning in)	(b) Adjusted qualifying distributions	(c) Net value of noncharitable-use assets	(d) Distribution ratio (col. (b) divided by col. (c))
2013			
2012			
2011			
2010			
2009			

2 Total of line 1, column (d)	2	
3 Average distribution ratio for the 5-year base period - divide the total on line 2 by 5, or by the number of years the foundation has been in existence if less than 5 years	3	
4 Enter the net value of noncharitable-use assets for 2014 from Part X, line 5	4	
5 Multiply line 4 by line 3	5	
6 Enter 1% of net investment income (1% of Part I, line 27b)	6	
7 Add lines 5 and 6	7	
8 Enter qualifying distributions from Part XII, line 4	8	

If line 8 is equal to or greater than line 7, check the box in Part VI, line 1b, and complete that part using a 1% tax rate.
See the Part VI instructions.

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Part VI Excise Tax Based on Investment Income (Section 4940(a), 4940(b), 4940(e), or 4948 - see instructions)

1a Exempt operating foundations described in section 4940(d)(2), check here <input type="checkbox"/> and enter "N/A" on line 1. Date of ruling or determination letter: _____ (attach copy of letter if necessary-see instructions)			
b Domestic foundations that meet the section 4940(e) requirements in Part V, check here <input type="checkbox"/> and enter 1% of Part I, line 27b		1	0.
c All other domestic foundations enter 2% of line 27b. Exempt foreign organizations enter 4% of Part I, line 12, col. (b).			
2 Tax under section 511 (domestic section 4947(a)(1) trusts and taxable foundations only. Others enter -0-)		2	0.
3 Add lines 1 and 2		3	0.
4 Subtitle A (income) tax (domestic section 4947(a)(1) trusts and taxable foundations only. Others enter -0-)		4	0.
5 Tax based on investment income. Subtract line 4 from line 3. If zero or less, enter -0-		5	0.
6 Credits/Payments:			
a 2014 estimated tax payments and 2013 overpayment credited to 2014	6a		
b Exempt foreign organizations - tax withheld at source	6b		
c Tax paid with application for extension of time to file (Form 8868)	6c		
d Backup withholding erroneously withheld	6d		
7 Total credits and payments. Add lines 6a through 6d	7		0.
8 Enter any penalty for underpayment of estimated tax. Check here <input type="checkbox"/> if Form 2220 is attached	8		
9 Tax due. If the total of lines 5 and 8 is more than line 7, enter amount owed	9		0.
10 Overpayment. If line 7 is more than the total of lines 5 and 8, enter the amount overpaid	10		
11 Enter the amount of line 10 to be: Credited to 2015 estimated tax <input type="checkbox"/> Refunded <input type="checkbox"/>	11		

Part VII-A Statements Regarding Activities

	Yes	No
1a During the tax year, did the foundation attempt to influence any national, state, or local legislation or did it participate or intervene in any political campaign?		X
b Did it spend more than \$100 during the year (either directly or indirectly) for political purposes (see instructions for the definition)? If the answer is "Yes" to 1a or 1b, attach a detailed description of the activities and copies of any materials published or distributed by the foundation in connection with the activities.		X
c Did the foundation file Form 1120-POL for this year?		X
d Enter the amount (if any) of tax on political expenditures (section 4955) imposed during the year: (1) On the foundation. \$ 0. (2) On foundation managers. \$ 0.		
e Enter the reimbursement (if any) paid by the foundation during the year for political expenditure tax imposed on foundation managers. \$ 0.		
2 Has the foundation engaged in any activities that have not previously been reported to the IRS? If "Yes," attach a detailed description of the activities		X
3 Has the foundation made any changes, not previously reported to the IRS, in its governing instrument, articles of incorporation, or bylaws, or other similar instruments? If "Yes," attach a conformed copy of the changes		X
4a Did the foundation have unrelated business gross income of \$1,000 or more during the year?		X
b If "Yes," has it filed a tax return on Form 990-T for this year?		
5 Was there a liquidation, termination, dissolution, or substantial contraction during the year? If "Yes," attach the statement required by General Instruction T		X
6 Are the requirements of section 508(e) (relating to sections 4941 through 4945) satisfied either: • By language in the governing instrument, or • By state legislation that effectively amends the governing instrument so that no mandatory directions that conflict with the state law remain in the governing instrument?	X	
7 Did the foundation have at least \$5,000 in assets at any time during the year? If "Yes," complete Part II, col (c), and Part XV	X	
8a Enter the states to which the foundation reports or with which it is registered (see instructions) <u>NY</u>		
b If the answer is "Yes" to line 7, has the foundation furnished a copy of Form 990-PF to the Attorney General (or designate) of each state as required by General Instruction G? If "No," attach explanation	X	
9 Is the foundation claiming status as a private operating foundation within the meaning of section 4942(j)(3) or 4942(j)(5) for calendar year 2014 or the taxable year beginning in 2014 (see instructions for Part XIV)? If "Yes," complete Part XIV		X
10 Did any persons become substantial contributors during the tax year? If "Yes," attach a schedule listing their names and addresses		X

N/A

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Part VII-A Statements Regarding Activities (continued)

11	At any time during the year, did the foundation, directly or indirectly, own a controlled entity within the meaning of section 512(b)(13)? If "Yes," attach schedule (see instructions)	11		X
12	Did the foundation make a distribution to a donor advised fund over which the foundation or a disqualified person had advisory privileges? If "Yes," attach statement (see instructions)	12		X
13	Did the foundation comply with the public inspection requirements for its annual returns and exemption application? Website address ► WWW.NIPERA.ORG	13	X	
14	The books are in care of ► GERALD M. SCHUETZ Telephone no. ► 919-595-1946 Located at ► 2525 MERIDIAN PARKWAY, STE 240, DURHAM, NC ZIP+4 ► 27713			
15	Section 4947(a)(1) nonexempt charitable trusts filing Form 990-PF in lieu of Form 1041 - Check here and enter the amount of tax-exempt interest received or accrued during the year ► 15 N/A			
16	At any time during calendar year 2014, did the foundation have an interest in or a signature or other authority over a bank, securities, or other financial account in a foreign country? See the instructions for exceptions and filing requirements for FinCEN Form 114, (formerly TD F 90-22.1). If "Yes," enter the name of the foreign country ►	16	Yes	No X

Part VII-B Statements Regarding Activities for Which Form 4720 May Be Required

File Form 4720 if any item is checked in the "Yes" column, unless an exception applies.

	Yes	No
1a During the year did the foundation (either directly or indirectly):		
(1) Engage in the sale or exchange, or leasing of property with a disqualified person? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
(2) Borrow money from, lend money to, or otherwise extend credit to (or accept it from) a disqualified person? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
(3) Furnish goods, services, or facilities to (or accept them from) a disqualified person? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
(4) Pay compensation to, or pay or reimburse the expenses of, a disqualified person? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
(5) Transfer any income or assets to a disqualified person (or make any of either available for the benefit or use of a disqualified person)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
(6) Agree to pay money or property to a government official? (Exception. Check "No" if the foundation agreed to make a grant to or to employ the official for a period after termination of government service, if terminating within 90 days.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
b If any answer is "Yes" to 1a(1)-(6), did any of the acts fail to qualify under the exceptions described in Regulations section 53.4941(d)-3 or in a current notice regarding disaster assistance (see instructions)? Organizations relying on a current notice regarding disaster assistance check here N/A ► <input type="checkbox"/>	1b	
c Did the foundation engage in a prior year in any of the acts described in 1a, other than excepted acts, that were not corrected before the first day of the tax year beginning in 2014?	1c	X
2 Taxes on failure to distribute income (section 4942) (does not apply for years the foundation was a private operating foundation defined in section 4942(j)(3) or 4942(j)(5)):		
a At the end of tax year 2014, did the foundation have any undistributed income (lines 6d and 6e, Part XIII) for tax year(s) beginning before 2014? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If "Yes," list the years ►		
b Are there any years listed in 2a for which the foundation is not applying the provisions of section 4942(a)(2) (relating to incorrect valuation of assets) to the year's undistributed income? (If applying section 4942(a)(2) to all years listed, answer "No" and attach statement - see instructions.) N/A	2b	
c If the provisions of section 4942(a)(2) are being applied to any of the years listed in 2a, list the years here. ►		
3a Did the foundation hold more than a 2% direct or indirect interest in any business enterprise at any time during the year? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
b If "Yes," did it have excess business holdings in 2014 as a result of (1) any purchase by the foundation or disqualified persons after May 26, 1969; (2) the lapse of the 5-year period (or longer period approved by the Commissioner under section 4943(c)(7)) to dispose of holdings acquired by gift or bequest; or (3) the lapse of the 10-, 15-, or 20-year first phase holding period? (Use Schedule C, Form 4720, to determine if the foundation had excess business holdings in 2014.) N/A	3b	
4a Did the foundation invest during the year any amount in a manner that would jeopardize its charitable purposes?	4a	X
b Did the foundation make any investment in a prior year (but after December 31, 1969) that could jeopardize its charitable purpose that had not been removed from jeopardy before the first day of the tax year beginning in 2014?	4b	X

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Part VII-B Statements Regarding Activities for Which Form 4720 May Be Required (continued)

5a During the year did the foundation pay or incur any amount to:

(1) Carry on propaganda, or otherwise attempt to influence legislation (section 4945(e))? ☐ Yes ☒ No

(2) Influence the outcome of any specific public election (see section 4955); or to carry on, directly or indirectly, any voter registration drive? ☐ Yes ☒ No

(3) Provide a grant to an individual for travel, study, or other similar purposes? ☐ Yes ☒ No

(4) Provide a grant to an organization other than a charitable, etc., organization described in section 4945(d)(4)(A)? (see instructions) ☒ Yes ☐ No

(5) Provide for any purpose other than religious, charitable, scientific, literary, or educational purposes, or for the prevention of cruelty to children or animals? ☐ Yes ☒ No

b If any answer is "Yes" to 5a(1)-(5), did any of the transactions fail to qualify under the exceptions described in Regulations section 53.4945 or in a current notice regarding disaster assistance (see instructions)? ☐ Yes ☒ No

Organizations relying on a current notice regarding disaster assistance check here ☐

c If the answer is "Yes" to question 5a(4), does the foundation claim exemption from the tax because it maintained expenditure responsibility for the grant? **SEE STATEMENT 7** ☒ Yes ☐ No

If "Yes," attach the statement required by Regulations section 53.4945-5(d)

6a Did the foundation, during the year, receive any funds, directly or indirectly, to pay premiums on a personal benefit contract? ☐ Yes ☒ No

b Did the foundation, during the year, pay premiums, directly or indirectly, on a personal benefit contract? ☐ Yes ☒ No

If "Yes" to 6b, file Form 8870

7a At any time during the tax year, was the foundation a party to a prohibited tax shelter transaction? ☐ Yes ☒ No

b If "Yes," did the foundation receive any proceeds or have any net income attributable to the transaction? ☐ Yes ☒ No **N/A**

Part VIII Information About Officers, Directors, Trustees, Foundation Managers, Highly Paid Employees, and Contractors

1 List all officers, directors, trustees, foundation managers and their compensation.

(a) Name and address	(b) Title, and average hours per week devoted to position	(c) Compensation (If not paid, enter -0-)	(d) Contributions to employee benefit plans and deferred compensation	(e) Expense account, other allowances
HUDSON BATES 2525 MERIDIAN PARKWAY, STE 240 DURHAM, NC 27713	EXECUTIVE DIRECTOR 40.00	308,428.	33,340.	0.
DAVID BUTLER 2525 MERIDIAN PARKWAY, STE 240 DURHAM, NC 27713	SECRETARY 1.25	0.	0.	0.
TIM AIKEN 2525 MERIDIAN PARKWAY, STE 240 DURHAM, NC 27713	CHAIRMAN 1.25	0.	0.	0.
GERALD M. SCHUETZ, CPA, CGMA 2525 MERIDIAN PARKWAY, STE 240 DURHAM, NC 27713	TREASURER 40.00	217,667.	32,676.	0.

2 Compensation of five highest-paid employees (other than those included on line 1). If none, enter "NONE."

(a) Name and address of each employee paid more than \$50,000	(b) Title, and average hours per week devoted to position	(c) Compensation	(d) Contributions to employee benefit plans and deferred compensation	(e) Expense account, other allowances
ADRIANA R OLLER - 2525 MERIDIAN PARKWAY, SUITE 240, DURHAM, NC 27713	TOXICOLOGIST 40.00	218,640.	30,247.	0.
CHRISTIAN E SCHLEKAT - 2525 MERIDIAN PARKWAY, SUITE 240, DURHAM, NC 27713	TOXICOLOGIST 40.00	193,675.	27,732.	0.
MIKE TAYLOR - 2525 MERIDIAN PARKWAY, SUITE 240, DURHAM, NC 27713	TOXICOLOGIST 40.00	141,925.	18,069.	0.
EMILY R GARMAN - 2525 MERIDIAN PARKWAY, SUITE 240, DURHAM, NC 27713	TOXICOLOGIST 40.00	120,351.	18,542.	0.
KATHERINE E HEIM - 2525 MERIDIAN PARKWAY, SUITE 240, DURHAM, NC 27713	TOXOCOLOGIST 40.00	97,283.	5,846.	0.

Total number of other employees paid over \$50,000 2

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**Part VIII Information About Officers, Directors, Trustees, Foundation Managers, Highly
Paid Employees, and Contractors (continued)**
3 Five highest-paid independent contractors for professional services. If none, enter "NONE."

(a) Name and address of each person paid more than \$50,000	(b) Type of service	(c) Compensation
UNIVERSITEIT GENT - SINT-PIETERSNIEUWSTRAAT 25, GENT, BELGIUM 9000	RESEARCH	169,811.
CANMET MINING & MINERAL SCIENCES LAB 555 BOOTH ST, OTTAWA, ON, CANADA K1A 0G1	RESEARCH	124,583.
WCA ENVIRONMENTAL - BRUNEL HOUSE, VOLUNTEER WAY, FARINGDON, UNITED KINGDOM SN7 7	RESEARCH	98,615.
PRODUCT SAFETY LABS INC - 2430 NEW HOLLADN PIKE, SUITE 300, LANCASTER, PA 17601	RESEARCH	76,951.
PHILE MOORE 102 WINDSPRING CT, CARY, NC 27518	IT CONSULTING	60,008.
Total number of others receiving over \$50,000 for professional services		7

Part IX-A Summary of Direct Charitable Activities

List the foundation's four largest direct charitable activities during the tax year. Include relevant statistical information such as the number of organizations and other beneficiaries served, conferences convened, research papers produced, etc.	Expenses
1 02-230100: BIOAVAILABILITY BASED SEDIMENT EQS - STATEMENT 12	239,809.
2 02-230300: ENVIRONMENTAL EXPOSURE - STATEMENT 13	148,285.
3 02-231400: NICKEL RISK ASSESSMENT IN TROPICAL REGIONS - STATEMENT 14	132,282.
4 02-110200: NICKEL METAL RELATED STUDIES - STATEMENT 15	85,498.

Part IX-B Summary of Program-Related Investments

Describe the two largest program-related investments made by the foundation during the tax year on lines 1 and 2.	Amount
1 N/A	
2	
All other program-related investments. See instructions.	
3	
Total. Add lines 1 through 3	0.

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Part X

Minimum Investment Return (All domestic foundations must complete this part. Foreign foundations, see instructions.)

1	Fair market value of assets not used (or held for use) directly in carrying out charitable, etc., purposes:		
a	Average monthly fair market value of securities	1a	0.
b	Average of monthly cash balances	1b	514,450.
c	Fair market value of all other assets	1c	
d	Total (add lines 1a, b, and c)	1d	514,450.
e	Reduction claimed for blockage or other factors reported on lines 1a and 1c (attach detailed explanation)	1e	0.
2	Acquisition indebtedness applicable to line 1 assets	2	0.
3	Subtract line 2 from line 1d	3	514,450.
4	Cash deemed held for charitable activities. Enter 1 1/2% of line 3 (for greater amount, see instructions)	4	7,717.
5	Net value of noncharitable-use assets Subtract line 4 from line 3. Enter here and on Part V, line 4	5	506,733.
6	Minimum investment return. Enter 5% of line 5	6	25,337.

Part XI

Distributable Amount (see instructions) (Section 4942(j)(3) and (j)(5) private operating foundations and certain foreign organizations check here ☐ and do not complete this part.)

1	Minimum investment return from Part X, line 6	1	25,337.
2a	Tax on investment income for 2014 from Part VI, line 5	2a	
b	Income tax for 2014. (This does not include the tax from Part VI.)	2b	
c	Add lines 2a and 2b	2c	0.
3	Distributable amount before adjustments. Subtract line 2c from line 1	3	25,337.
4	Recoveries of amounts treated as qualifying distributions	4	0.
5	Add lines 3 and 4	5	25,337.
6	Deduction from distributable amount (see instructions)	6	0.
7	Distributable amount as adjusted. Subtract line 6 from line 5. Enter here and on Part XIII, line 1	7	25,337.

Part XII

Qualifying Distributions (see instructions)

1	Amounts paid (including administrative expenses) to accomplish charitable, etc., purposes:		
a	Expenses, contributions, gifts, etc. - total from Part I, column (d), line 26	1a	1,116,570.
b	Program-related investments - total from Part IX-B	1b	0.
2	Amounts paid to acquire assets used (or held for use) directly in carrying out charitable, etc., purposes	2	
3	Amounts set aside for specific charitable projects that satisfy the:		
a	Suitability test (prior IRS approval required)	3a	
b	Cash distribution test (attach the required schedule)	3b	
4	Qualifying distributions. Add lines 1a through 3b. Enter here and on Part V, line 8, and Part XIII, line 4	4	1,116,570.
5	Foundations that qualify under section 4940(e) for the reduced rate of tax on net investment income. Enter 1% of Part I, line 27b	5	0.
6	Adjusted qualifying distributions. Subtract line 5 from line 4	6	1,116,570.

Note The amount on line 6 will be used in Part V, column (b), in subsequent years when calculating whether the foundation qualifies for the section 4940(e) reduction of tax in those years.

Form 990-PF (2014)

**NICKEL PRODUCERS ENVIRONMENTAL
RESEARCH ASSOCIATION, INC.**
Part XIII Undistributed Income (see instructions)

	(a) Corpus	(b) Years prior to 2013	(c) 2013	(d) 2014
1 Distributable amount for 2014 from Part XI, line 7				25,337.
2 Undistributed income, if any, as of the end of 2014				
a Enter amount for 2013 only			0.	
b Total for prior years:		0.		
3 Excess distributions carryover, if any, to 2014:				
a From 2009	2,244,363.			
b From 2010	1,811,403.			
c From 2011	1,357,384.			
d From 2012	1,130,041.			
e From 2013	1,416,284.			
f Total of lines 3a through e	7,959,475.			
4 Qualifying distributions for 2014 from Part XII, line 4: ► \$ 1,116,570.				
a Applied to 2013, but not more than line 2a			0.	
b Applied to undistributed income of prior years (Election required - see instructions)		0.		
c Treated as distributions out of corpus (Election required - see instructions)	0.			
d Applied to 2014 distributable amount				25,337.
e Remaining amount distributed out of corpus	1,091,233.			
5 Excess distributions carryover applied to 2014 (If an amount appears in column (d), the same amount must be shown in column (a).)	0.			0.
6 Enter the net total of each column as indicated below:				
a Corpus. Add lines 3f, 4c, and 4e. Subtract line 5	9,050,708.			
b Prior years' undistributed income. Subtract line 4b from line 2b		0.		
c Enter the amount of prior years' undistributed income for which a notice of deficiency has been issued, or on which the section 4942(a) tax has been previously assessed		0.		
d Subtract line 6c from line 6b. Taxable amount - see instructions		0.		
e Undistributed income for 2013. Subtract line 4a from line 2a. Taxable amount - see instr.			0.	
f Undistributed income for 2014. Subtract lines 4d and 5 from line 1. This amount must be distributed in 2015				0.
7 Amounts treated as distributions out of corpus to satisfy requirements imposed by section 170(b)(1)(F) or 4942(g)(3) (Election may be required - see instructions)	0.			
8 Excess distributions carryover from 2009 not applied on line 5 or line 7	2,244,363.			
9 Excess distributions carryover to 2015. Subtract lines 7 and 8 from line 6a	6,806,345.			
10 Analysis of line 9:				
a Excess from 2010	1,811,403.			
b Excess from 2011	1,357,384.			
c Excess from 2012	1,130,041.			
d Excess from 2013	1,416,284.			
e Excess from 2014	1,091,233.			

Part XIV Private Operating Foundations (see instructions and Part VII-A, question 9)

N/A

1 a If the foundation has received a ruling or determination letter that it is a private operating foundation, and the ruling is effective for 2014, enter the date of the ruling

b Check box to indicate whether the foundation is a private operating foundation described in section

4942(j)(3) or

4942(1)(5)

2 a Enter the lesser of the adjusted net income from Part I or the minimum investment return from Part X for each year listed

b 85% of line 2a

c Qualifying distributions from Part XII,
line 4 for each year listed

d Amounts included in line 2c not used directly for active conduct of exempt activities

e Qualifying distributions made directly for active conduct of exempt activities.

Subtract line 2d from line 2c

3 Complete 3a, b, or c for the alternative test relied upon:

a "Assets" alternative test - enter:

(1) Value of all assets

(2) Value of assets qualifying under section 4942(j)(3)(B)(i)

b "Endowment" alternative test - enter 2/3 of minimum investment return shown in Part X, line 6 for each year listed

c "Support" alternative test - enter:

(1) Total support other than gross investment income (interest, dividends, rents, payments on securities loans (section 512(a)(5)), or royalties)

(2) Support from general public and 5 or more exempt organizations as provided in section 4942(i)(3)(B)(iii)

(3) Largest amount of support from an exempt organization

(4) Gross investment income

Part XV **Supplementary Information (Complete this part only if the foundation had \$5,000 or more in assets at any time during the year-see instructions.)**

1 Information Regarding Foundation Managers:

a List any managers of the foundation who have contributed more than 2% of the total contributions received by the foundation before the close of any tax year (but only if they have contributed more than \$5,000). (See section 507(d)(2).)

NONE

b List any managers of the foundation who own 10% or more of the stock of a corporation (or an equally large portion of the ownership of a partnership or other entity) of which the foundation has a 10% or greater interest.

NONE

2 Information Regarding Contribution, Grant, Gift, Loan, Scholarship, etc., Programs:

Check here ☐ if the foundation only makes contributions to preselected charitable organizations and does not accept unsolicited requests for funds. If the foundation makes gifts, grants, etc. (see instructions) to individuals or organizations under other conditions, complete items 2a, b, c, and d.

a The name, address, and telephone number or e-mail address of the person to whom applications should be addressed:

SEE STATEMENT 8

b. The form in which applications should be submitted and information and materials they should include:

c Any submission deadlines:

d Any restrictions or limitations on awards, such as by geographical areas, charitable fields, kinds of institutions, or other factors:

**NICKEL PRODUCERS ENVIRONMENTAL
RESEARCH ASSOCIATION, INC.**
Part XV **Supplementary Information** (continued)**3 Grants and Contributions Paid During the Year or Approved for Future Payment**

Recipient Name and address (home or business)	If recipient is an individual, show any relationship to any foundation manager or substantial contributor	Foundation status of recipient	Purpose of grant or contribution	Amount
a Paid during the year				
SEE ATTACHED STATEMENT 10				
Total			▶ 3a	0.
b Approved for future payment				
SEE ATTACHED STATEMENT 11				
Total			▶ 3b	0.

Part XVII

Information Regarding Transfers To and Transactions and Relationships With Noncharitable Exempt Organizations

- | | | Yes | No |
|----------|--|--------------|----------|
| 1 | Did the organization directly or indirectly engage in any of the following with any other organization described in section 501(c) of the Code (other than section 501(c)(3) organizations) or in section 527, relating to political organizations? | | |
| a | Transfers from the reporting foundation to a noncharitable exempt organization of: | | |
| | (1) Cash | 1a(1) | X |
| | (2) Other assets | 1a(2) | X |
| b | Other transactions: | | |
| | (1) Sales of assets to a noncharitable exempt organization | 1b(1) | X |
| | (2) Purchases of assets from a noncharitable exempt organization | 1b(2) | X |
| | (3) Rental of facilities, equipment, or other assets | 1b(3) | X |
| | (4) Reimbursement arrangements | 1b(4) | X |
| | (5) Loans or loan guarantees | 1b(5) | X |
| | (6) Performance of services or membership or fundraising solicitations | 1b(6) | X |
| c | Sharing of facilities, equipment, mailing lists, other assets, or paid employees | 1c | X |
| d | If the answer to any of the above is "Yes," complete the following schedule. Column (b) should always show the fair market value of the goods, other assets, or services given by the reporting foundation. If the foundation received less than fair market value in any transaction or sharing arrangement, show in column (d) the value of the goods, other assets, or services received. | | |

[illegible]

- 2a** Is the foundation directly or indirectly affiliated with, or related to, one or more tax-exempt organizations described in section 501(c) of the Code (other than section 501(c)(3)) or in section 527? ☐ Yes ☒ No
- b** If "Yes," complete the following schedule.

(a) Name of organization	(b) Type of organization	(c) Description of relationship
N/A		

**Sign
Here**

Under penalties of perjury, declare that I have examined this return, including accompanying schedules and statements, and to the best of my knowledge and belief, it is true, correct, and complete. Declaration of preparer (other than taxpayer) is based on all information of which preparer has any knowledge.

Signature of officer or trustee

Date 8/14/15

► **EXECUTIVE
DIRECTOR**
Title

May the IRS discuss this return with the preparer shown below (see instr)?

☒ Yes ☐ No**Paid
Preparer
Use Only**

Print/Type preparer's name
**ANDREA WOODELL
EASON**

Preparer's signature

Indira Kiser

Date

8/12/15

Check ☐ self-employed

PTIN

P00361629

Firm's name ► **BLACKMAN & SLOOP, CPAS, P.A.**

Firm's EIN ► 56-1304727

Firm's address ▶ 1414 RALEIGH RD, SUITE 300
CHAPEL HILL, NC 27517

Phone no. (919) 942-8700

Form **990-PF** (2014)

Schedule B(Form 990, 990-EZ,
or 990-PF)Department of the Treasury
Internal Revenue Service**Schedule of Contributors**

▶ Attach to Form 990, Form 990-EZ, or Form 990-PF.
▶ Information about Schedule B (Form 990, 990-EZ, or 990-PF) and
its instructions is at www.irs.gov/form990.

OMB No 1545-0047

2014

Name of the organization

**NICKEL PRODUCERS ENVIRONMENTAL
RESEARCH ASSOCIATION, INC.**

Employer identification number

13-3070077

Organization type (check one)

Filers of:

Section:

Form 990 or 990-EZ

☐ 501(c)() (enter number) organization☐ 4947(a)(1) nonexempt charitable trust **not** treated as a private foundation☐ 527 political organization

Form 990-PF

☒ 501(c)(3) exempt private foundation☐ 4947(a)(1) nonexempt charitable trust treated as a private foundation☐ 501(c)(3) taxable private foundationCheck if your organization is covered by the **General Rule** or a **Special Rule**.**Note.** Only a section 501(c)(7), (8), or (10) organization can check boxes for both the General Rule and a Special Rule. See instructions.**General Rule**

- ☒ For an organization filing Form 990, 990-EZ, or 990-PF that received, during the year, contributions totaling \$5,000 or more (in money or property) from any one contributor. Complete Parts I and II. See instructions for determining a contributor's total contributions.

Special Rules

- ☐ For an organization described in section 501(c)(3) filing Form 990 or 990-EZ that met the 33 1/3% support test of the regulations under sections 509(a)(1) and 170(b)(1)(A)(vi), that checked Schedule A (Form 990 or 990-EZ), Part II, line 13, 16a, or 16b, and that received from any one contributor, during the year, total contributions of the greater of (1) \$5,000 or (2) 2% of the amount on (i) Form 990, Part VIII, line 1h, or (ii) Form 990-EZ, line 1. Complete Parts I and II.
- ☐ For an organization described in section 501(c)(7), (8), or (10) filing Form 990 or 990-EZ that received from any one contributor, during the year, total contributions of more than \$1,000 *exclusively* for religious, charitable, scientific, literary, or educational purposes, or for the prevention of cruelty to children or animals. Complete Parts I, II, and III.
- ☐ For an organization described in section 501(c)(7), (8), or (10) filing Form 990 or 990-EZ that received from any one contributor, during the year, contributions *exclusively* for religious, charitable, etc., purposes, but no such contributions totaled more than \$1,000. If this box is checked, enter here the total contributions that were received during the year for an *exclusively* religious, charitable, etc., purpose. Do not complete any of the parts unless the **General Rule** applies to this organization because it received *nonexclusively* religious, charitable, etc., contributions totaling \$5,000 or more during the year. ▶ \$ _____

Caution. An organization that is not covered by the General Rule and/or the Special Rules does not file Schedule B (Form 990, 990-EZ, or 990-PF), but it **must** answer "No" on Part IV, line 2, of its Form 990, or check the box on line H of its Form 990-EZ or on its Form 990-PF, Part I, line 2, to certify that it does not meet the filing requirements of Schedule B (Form 990, 990-EZ, or 990-PF).

LHA For Paperwork Reduction Act Notice, see the Instructions for Form 990, 990-EZ, or 990-PF. Schedule B (Form 990, 990-EZ, or 990-PF) (2014)

Name of organization

**NICKEL PRODUCERS ENVIRONMENTAL
RESEARCH ASSOCIATION, INC.**

Employer identification number

13-3070077

Part I Contributors (see instructions) Use duplicate copies of Part I if additional space is needed

(a) No.	(b) Name, address, and ZIP + 4	(c) Total contributions	(d) Type of contribution
1	NICKEL INSTITUTE BROOKFIELD PLACE 161 BAY STREET, SUITE 2700 TORONTO, ONTARIO, CANADA M5J 2S1	\$ 3,167,838.	Person <input checked="" type="checkbox"/> Payroll <input type="checkbox"/> Noncash <input type="checkbox"/> (Complete Part II for noncash contributions)
		\$	Person <input type="checkbox"/> Payroll <input type="checkbox"/> Noncash <input type="checkbox"/> (Complete Part II for noncash contributions)
		\$	Person <input type="checkbox"/> Payroll <input type="checkbox"/> Noncash <input type="checkbox"/> (Complete Part II for noncash contributions)
		\$	Person <input type="checkbox"/> Payroll <input type="checkbox"/> Noncash <input type="checkbox"/> (Complete Part II for noncash contributions)
		\$	Person <input type="checkbox"/> Payroll <input type="checkbox"/> Noncash <input type="checkbox"/> (Complete Part II for noncash contributions)
		\$	Person <input type="checkbox"/> Payroll <input type="checkbox"/> Noncash <input type="checkbox"/> (Complete Part II for noncash contributions)
		\$	Person <input type="checkbox"/> Payroll <input type="checkbox"/> Noncash <input type="checkbox"/> (Complete Part II for noncash contributions)

Name of organization

NICKEL PRODUCERS ENVIRONMENTAL
RESEARCH ASSOCIATION, INC.

Employer identification number

13-3070077

Part II Noncash Property (see instructions) Use duplicate copies of Part II if additional space is needed

(a) No. from Part I	(b) Description of noncash property given	(c) FMV (or estimate) (see instructions)	(d) Date received
		\$	
		\$	
		\$	
		\$	
		\$	
		\$	
		\$	
		\$	
		\$	

Name of organization

Employer identification number

**NICKEL PRODUCERS ENVIRONMENTAL
RESEARCH ASSOCIATION, INC.**

13-3070077

Part III

Exclusively religious, charitable, etc., contributions to organizations described in section 501(c)(7), (8), or (10) that total more than \$1,000 for the year from any one contributor. Complete columns (a) through (e) and the following line entry. For organizations completing Part III, enter the total of exclusively religious, charitable, etc., contributions of \$1,000 or less for the year (Enter this info once) ▶ \$

Use duplicate copies of Part III if additional space is needed

(a) No. from Part I	(b) Purpose of gift	(c) Use of gift	(d) Description of how gift is held
	(e) Transfer of gift		
	Transferee's name, address, and ZIP + 4		Relationship of transferor to transferee
	(e) Transfer of gift		
	Transferee's name, address, and ZIP + 4		Relationship of transferor to transferee
	(e) Transfer of gift		
	Transferee's name, address, and ZIP + 4		Relationship of transferor to transferee
	(e) Transfer of gift		
	Transferee's name, address, and ZIP + 4		Relationship of transferor to transferee
	(e) Transfer of gift		
	Transferee's name, address, and ZIP + 4		Relationship of transferor to transferee

FORM 990-PF INTEREST ON SAVINGS AND TEMPORARY CASH INVESTMENTS STATEMENT 1

SOURCE	(A) REVENUE PER BOOKS	(B) NET INVESTMENT INCOME	(C) ADJUSTED NET INCOME
INTEREST INCOME	179.	179.	
TOTAL TO PART I, LINE 3	179.	179.	

FORM 990-PF ACCOUNTING FEES STATEMENT 2

DESCRIPTION	(A) EXPENSES PER BOOKS	(B) NET INVEST- MENT INCOME	(C) ADJUSTED NET INCOME	(D) CHARITABLE PURPOSES
ACCOUNTING	11,935.	240.		0.
TO FORM 990-PF, PG 1, LN 16B	11,935.	240.		0.

FORM 990-PF OTHER PROFESSIONAL FEES STATEMENT 3

DESCRIPTION	(A) EXPENSES PER BOOKS	(B) NET INVEST- MENT INCOME	(C) ADJUSTED NET INCOME	(D) CHARITABLE PURPOSES
MISCELLANEOUS PROFESSIONAL FEES	10.	0.		0.
TO FORM 990-PF, PG 1, LN 16C	10.	0.		0.

FORM 990-PF OTHER EXPENSES STATEMENT 4

DESCRIPTION	(A) EXPENSES PER BOOKS	(B) NET INVEST- MENT INCOME	(C) ADJUSTED NET INCOME	(D) CHARITABLE PURPOSES
MEETINGS	4,934.	0.		0.
MISCELLANEOUS	2,157.	0.		0.
DUES & FEES	7,450.	0.		0.
OFFICE COSTS	183,602.	0.		0.
TO FORM 990-PF, PG 1, LN 23	198,143.	0.		0.

FORM 990-PF	DEPRECIATION OF ASSETS NOT HELD FOR INVESTMENT	STATEMENT	5
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DESCRIPTION	COST OR OTHER BASIS	ACCUMULATED DEPRECIATION	BOOK VALUE	FAIR MARKET VALUE
COMPUTER EQUIPMENT	143,099.	0.	143,099.	28,189.
FURNITURE & FIXTURES	50,371.	0.	50,371.	15,111.
TO 990-PF, PART II, LN 14	193,470.	0.	193,470.	43,300.

FORM 990-PF	OTHER LIABILITIES	STATEMENT	6
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DESCRIPTION	BOY AMOUNT	EOY AMOUNT
PAYROLL LIABILITIES	296,934.	328,112.
DEFERRED RENT	35,476.	37,576.
TOTAL TO FORM 990-PF, PART II, LINE 22	332,410.	365,688.

FORM 990-PF

EXPENDITURE RESPONSIBILITY STATEMENT
PART VII-B, LINE 5C

STATEMENT 7

GRANTEE'S NAME

SEE STATEMENT 10

GRANTEE'S ADDRESSGRANT AMOUNTDATE OF GRANTAMOUNT EXPENDEDPURPOSE OF GRANT

FORM 990-PF	GRANT APPLICATION SUBMISSION INFORMATION	STATEMENT	8
	PART XV, LINES 2A THROUGH 2D		

NAME AND ADDRESS OF PERSON TO WHOM APPLICATIONS SHOULD BE SUBMITTED

HUDSON BATES
NIPERA 2525 MERIDIAN PKW. SUITE 240
DURHAM, NC 27713

TELEPHONE NUMBER

919-595-1946

FORM AND CONTENT OF APPLICATIONS

APPLICANTS SHOULD SUBMIT DETAILS ON THE PROPOSED INVESTIGATION, A PROPOSED BUDGET & ESTIMATED TIME NECESSARY TO COMPLETE THE PROJECT.

ANY SUBMISSION DEADLINES

MOST APPLICATIONS ARE REPLIES TO PROPOSAL REQUESTS MADE BY NIPERA WITH SPECIFIC DEADLINES.

RESTRICTIONS AND LIMITATIONS ON AWARDS

GRANTS ARE AWARDED ONLY ON THE TOXICITY OF NICKEL AND NICKEL COMPOUNDS.

PART XV3(A) - GRANTS AND CONTRIBUTIONS PAID DURING THE YEAR

Grantee	Address	Contract Number	Relationship	Foundation Status	Purpose of grant	Grant Expended
G Oberdorster/University of Rochester and L Haber/TERA		02-110101-0110	None	n/a	Vitro and in Vivo Inhal support	\$ 2,091
H Clewell/The Hamner Institute	North Carolina	02-110101-0111	None	n/a	Mode of Action Ni Studies	9 724
G Oberdorster/University of Rochester and L Haber/TERA		02-110101-0210	None	n/a	Vitro and in vivo inhalation	2,875
S Constant/Epithelix Sarl	Switzerland	02-110101-0211	None	n/a	Devlpmnt of a 3D in vitro cell	12 700
		02-110103-0014	None	n/a	Sample Repository/Storage	2 159
Kirby Health Center Laboratory	Pennsylvania	02-110203-0013	None	n/a	Acute Inhalation tx (metal & black NiO)	8 958
		02-110203-0113	None	n/a	Acute Inhalation Study - PSL	21 400
		02-110203-0114	None	n/a	Acute Inhalation Study - Ni Chloride	21 340
Product Safety Labs Inc	New Jersey	02-110203-0213			Acute Inhalation Study-Ni Chloride	33 800
Tox Strategies, Inc	Texas	02-120101-0213			Pub Bioac Mtl - Phase 2 & 3	2 382
		02-120102-0114			Update Alloy Facv Sheet	3 753
J Goodman/Gradient and S Seilkop/SKS Consulting Services		02-140101-0111	None	n/a	Draft Manuscripts	5,719
M Kohrman Vincen/TERA		02-140101-0211	None	n/a	Meta Analy Resp Cancer	5 100
J Goodman/Gradient and S Seilkop/SKS Consulting Services		02-140101-0311	None	n/a	Review Rpts and Manuscripts	4,950
		02-140102-0012	None	n/a	Alloys HERAG validation iconel & alloys	2 128
Powder Alloy Co	Ohio	02-140102-0113	None	n/a	Purchase Alloys for Study	300
CCE Technologies	Minnesota					
Jet Pulverizer Co	New Jersey					
Kirby Health Center Laboratory	Pennsylvania					
Particle Technology Labs	Illinois					
Stantec Consulting Serevices, Inc	Ohio	02-210102-0112	None	n/a	Effects of Metals on Ambient Matter-Stantec	2 000
		02-210202-0114	None	n/a	Dosimetry Calculations - Air	3 825
		02-210203-0114	None	n/a	Updates on Nanomaterial Regulations	30 000
Toxminds BVBA	Brussels Belgium	02-210204-0213	None	n/a	2013-2014 Petry at ECETOC Taskforce	7 989
ECETOC	Brussels, Belgium	02-210207-0013			ECETOC-dues	13,936
		02-227080-011			Admin-Travel	29,126
Assessing Risks of Chemicals	Ghent Belgium	02-230102-0113			Update Sediments Effects Assessment	7 066
Kent State University	Ohio	02-230102-0213			Ni Sed Field Valid-Kent State	35 583
University of Gent	Gent Belgium	02-230102-0313			Sub-cellular Fractionation-Gent	25 609
Regents of the Univ of MI	Michigan	02-230102-0513			Ni Sed Field Valid-Univ MI	37 320
Ghent University	Ghent Belgium	02-230103-0112	None	N/A	Adv Res on Ni Tox in sediments	94 206
		02-230103-0114	None	N/A	Pub of Adv Res on Ni in Sed	5 025
Wright State University	Ohio	02-230104-0112	None	n/a	Field Validation - Wright State	35 000
USDA, Aquicultural Research Service	Maryland	02-230201-0013			Evaluation of ecological effectiveness of remediation meth	22 878
Assessing Risks of Chemicals	Ghent Belgium	02-230301-0213			Update ERV's	23 702
CANMET Mining and Mineral Sciences Lab	Ottawa, Canada	02-230301-0313			T/DP on Ni Concentrations	124 583
South Carolina Research Foundation	South Carolina	02-230502-0111	None	n/a	Marine/Estuarine Sediment Toxicity	32 317
South Carolina Research Foundation	South Carolina	02-230502-0113			SCRF Definitive Marine Sed Test	17 500
G Thomas Chandler	South Carolina	02-230503-0113			2013 Consulting Support - Chandler	9 900
wca Environmental Ltd	United Kingdom	02-230602-0112	None	n/a	BLM Use/Validation Australia-WC	7 049
		02-230602-0114	None	n/a	Australian Committee on WQG - Travel	24 479
Ecotox Services Australia Pty Ltd	Australia	02-230602-0312	None	N/A	BLM Toxicity test Australia-Ecotox Services	36 204
University of Gent	Gent Belgium	02-230701-0013			Mixtures Toxicity-Gent	20 879
Colorado School of Mines	Colorado	02-230701-0113	None	n/a	2013 Mixtures Acute Testinq-CSM	6 250
		02-230701-0114	None	n/a	Evaluate Mechanisms of Mixture Toxicity	10 506
Colorado School of Mines	Colorado	02-230701-0213			2014 Mixtures Acute Tox - CSM	11 250
		02-230703-0114	None	n/a	Multi-Metallic BLMDev & Eval	10 908
		02-230801-0114	None	n/a	Dev EU user-friendly modeling tools	30 000
VITO NV	Belgium	02-230803-0112	None	N/A	VITO MvE inhalation manuscript	9 678
Fraunhofer Institute for Molecular Biology and Applied Ecology	Germany	02-230903-0112	None	N/A	Publication of Ni Microcosm Study	9,436
		02-230901-0114	None	N/A	EU WFD Strategy	7 704
University of Guelph	Canada	02-231001-0112	None	n/a	Weight of Evidence Analysis	5 776
		02-231001-0114	None	n/a	Evidence Analysis-WCA	5 718
		02-231102-0014	None	n/a	Toxicity data generation for tropical studies	19
		02-231102-0114	None	n/a	T/DP Latente Testinq - CANMET	71
		02-231401-0214	None	n/a	Tropical Hydrobiology	22 270
		02-231301-0114	None	n/a	Subject Matter Expert Workshop	15 629
		02-231401-0114	None	n/a	Tropical RA Workshop	44 651
		02-231401-0314	None	n/a	Tropical RA Workshop Consultant	5 217
		02-231401-0414	None	n/a	CSIRO Tropical Research	50 047
		02-231401-0614	None	n/a	WCA Tropical Research	10 097
Southern Research Institute	Alabama	02-240101-0212	None	n/a	One-Generation Study	27 750
Southern Research Institute	Alabama	02-240101-0312	None	n/a	Acute Perinatal Study	9 870
Cardno ChemRisk	California	02-240102-0013	None	n/a	Nanoparticle Nickel Toxicity Report	8 000
		02-240201-0114	None	n/a	Nickel Metal Pellets	4 448
American Chemistry Council, Inc	Washington, DC	02-240201-0213	None	n/a	American Chemistry Council Dues	10 000
		02-240201-0214	None	n/a	Accent Imaging Project	793
Gunter Oberdorster	New York	02-240201-0313	None	n/a	Oberdorster-Reviewer Ni Nanotox Report	3 250
		02-240201-0314	None	n/a	Euromataux He TAP Activities	5 032
		02-240201-0414	None	n/a	Hay Group Data Access	6,650
						\$ 1,116,571

Grantee	Address	Contract Number	Relationship	Foundation Status	Purpose of grant	
					Title of Study	Amount
G Oberdorster/University of Rochester and L Haber/TERA	North Carolina	02-110101-0110	None	n/a	Vitro and in Vivo Inhal support	\$ 2,715
H Clewell/The Hamner Institute		02-110101-0111	None	n/a	Mode of Action Ni Studies	21,462
G Oberdorster/University of Rochester and L Haber/TERA		02-110101-0210	None	n/a	Vitro and in vivo inhalation	8,750
Tox Strategies Inc	Texas	02-110203-0114	None	n/a	Acute Inhalation Study - Ni Chloride	21,340
		02-120101-0113	None	n/a	Pub Bioaccessibility Mat-Phase 1 Scoping	312
		02-120101-0213	None	n/a	Pub Bioac Mtl - Phase 2 & 3	688
J Goodman/Gradient and S Seilkop/SKS Consulting Services		02-120102-0114	None	n/a	Update Alloy Facy Sheet	2,498
M Kohman Vincent/TERA		02-140101-0111	None	n/a	Draft Manuscripts	1,102
J Goodman/Gradient and S Seilkop/SKS Consulting Services		02-140101-0211	None	n/a	Meta Analy Resp Cancer	10,200
		02-140101-0311	None	n/a	Review Rpts and Manuscripts	750
WIL Research Laboratories LLC	Ohio	02-140102-0212	None	n/a	4-Week Nose Inhalation Study	95,000
WIL Research Laboratories LLC	Ohio	02-140102-0312	None	n/a	5-Day Range Finding Study	35,250
Tox minds BVBA	Brussels, Belgium	02-210202-0114	None	n/a	Dosimetry Calculations - Air	1,175
ECETOC	Brussels Belgium	02-210204-0213	None	n/a	2013-2014 Petry at ECETOC Taskforce	2,011
Assessing Risks of Chemicals	Lovendegem, Belgium	02-230102-0112	None	n/a	ECETOC-dues	1,065
Kent State University	Ohio	02-230102-0213	None	n/a	Modeling Spt for Bioavailability	8,710
University of Gent	Gent, Belgium	02-230102-0313	None	n/a	Ni Sed Field Valid-Kent State	17,791
Assessing Risks of Chemicals	Ghent, Belgium	02-230102-0413	None	n/a	Sub-cellular Fractionation-Gent	791
Reagents of the Univ of MI	Michigan	02-230102-0513	None	n/a	Manne Sediment Bioavail-ARCHE	13,913
Ghent University	Ghent, Belgium	02-230103-0112	None	n/a	Ni Sed Field Valid-Univ MI	18,660
		02-230103-0114	None	n/a	Adv Res on Ni Tox in sediments	25,471
Wright State University	Ohio	02-230104-0112	None	n/a	Pub of Adv Res on Ni in Sed	4,963
The Regents of the University of Michigan	Michigan	02-230104-0212	None	n/a	Field Validation - Wright State	14,333
USDA, Agricultural Research Service	Maryland	02-230201-0013	None	n/a	Field Validation - Univ of Michigan	13,567
		02-230202-0014	None	n/a	Evaluation of ecological effectiveness of remediation methods	27,122
Assessing Risks of Chemicals	Ghent, Belgium	02-230301-0213	None	n/a	Use current datasets models other RA purposes	21,714
CANMET Mining and Mineral Sciences Lab	Ottawa, Canada	02-230301-0313	None	n/a	Update ERV's	26,615
		02-230401-0114	None	n/a	T/DP on Ni Concentrations	5,417
G Thomas Chandler	South Carolina	02-230403-0114	None	n/a	Manne BLM Development	25,000
		02-230503-0113	None	n/a	Manne BLM Development	75,000
Ecotox Services Australia Pty Ltd	Australia	02-230602-0214	None	n/a	2013 Consulting Support - Chandler	225
University of Gent	Gent, Belgium	02-230602-0312	None	n/a	enss Bioavailability Models	56,583
		02-230701-0013	None	n/a	BLM Toxicity test Australia-Ecotox Services	32,305
Colorado School of Mines	Colorado	02-230701-0114	None	n/a	Mixtures Toxicity-Gent	2,833
		02-230701-0213	None	n/a	Evaluate Mechanisms of Mixture Toxicity	12,998
		02-230703-0114	None	n/a	2014 Mixtures Acute Tox - CSM	3,750
		02-231102-0114	None	n/a	Multi-Metallic BLMev & Eval	13,456
		02-231201-0114	None	n/a	T/D P Latente Testing - CANMET	49,248
		02-231301-0114	None	n/a	ETAP	36,855
		02-231301-0214	None	n/a	Subject Matter Expert Workshop	439
ARCHE, wca Windward Env VITO NV	Belgium	02-230802-0111	None	n/a	Ni Toxicity White Paper - Queens Univ	15,655
		02-230803-0112	None	n/a	Dev Env Risk Assmnt FS-ARCHE	17,122
		02-230901-0114	None	n/a	VITO MvE inhalation manuscript	17,236
Fraunhofer Institute for Molecular Biology and Applied Ecology	Germany	02-230903-0112	None	n/a	EU WfFD Strategy	9,949
wca Environmental Ltd	United Kingdom		None	n/a	Publication of Ni Microcosm Study	564
University of Guelph	Canada	02-231001-0112	None	n/a	Dev Guidance for Implementation of Ni EQS - WCA	3,522
		02-231001-0114	None	n/a	Weight of Evidence Analysis	4,888
		02-231401-0214	None	n/a	Evidence Analysis-WCA	338
		02-231401-0314	None	n/a	Tropical RA Hydrobiology	4,653
		02-231401-0414	None	n/a	Tropical RA Workshop Consultant	13,783
		02-231401-0514	None	n/a	CSIROTropical Research	174,613
		02-231401-0614	None	n/a	Hydrobiology Tropical Research	65,131
		02-231401-0714	None	n/a	WCA Tropical Research	30,084
Southern Research Institute	Alabama	02-240101-0212	None	n/a	Univ of Hong Kong	15,000
		02-240201-0214	None	n/a	One-Generation Study	23,300
Southern Research Institute	Alabama	02-240101-				

Program	EQS Program – Sediment Sub-program <i>NB: The EQS Program is divided into four sub-programs to group Projects that address issues pertaining to a specific environmental compartment (Water, Sediment, Soil) or management process (Engagement). One fiche will be prepared to describe the projects for which new funds are requested for each of the four EQS Sub-projects</i>
Project Title	Bioavailability based Sediment EQS (02-2.3.01.00-0000) Marine/estuarine sediment toxicity (02-2.3.05.00-0000)
Project Number	as above
NI Project Manager	C.E. Schlekot and E. Garman
Contractor	Ghent U, ARCHE, U Michigan, Wright State U, USC, T. Chandler, Kent State University, wca environment
Fiche Completion Date	May 2015
Project Date	Start 2011
	Projected Completion Indefinite
Project Description	<p>These projects provide research support for the development, validation and implementation of sediment bioavailability models in freshwater and marine systems and the generation freshwater and marine sediment toxicity data to address of several key areas of uncertainty in nickel sediment risk assessment</p> <p>The Projects entitled "Bioavailability-based Sediment EQS" focuses on the validation of the sediment bioavailability models generated in the conclusion i) sediment testing program and the generation data to evaluate contributions from dietary toxicity. This is an ongoing project that has several associated previous contracts: 2011-26, 2012-07, 2012-08, 2012-10, 2012-11, 2012-18, and 2012-24. A contracts were established with Ghent University (02-230103-0112 Advanced research on nickel toxicity in sediments \$119,667) and (02-230102-0313 \$37,800) to perform additional toxicity and bioavailability testing and novel mechanistic work on effects of Ni to sediment organisms. Also, ARCHE was contracted (02-230102-0113) to synthesize the recently completed work on additional test species into a revised version of the Ni sediment effects assessment that will be submitted in the Ni REACH dossiers. 02-230103-0012 Advanced Research on Ni Toxicity (species, bioavailability and dietborne toxicity) Publication of Results will be signed with ARCHE in Quarter 2 2014 to publish the results of the completed Ghent University study. Two contracts were initiated with the University of Michigan (02-230102-0513 \$74,640) and Kent State University (02-230102-0213 \$71,165) to field-validate sediment bioavailability models. 02-230104-0112 and 02-230104-0212 (\$34,333) were initiated with the University of Michigan and Kent State University to examine nickel behavior and toxicity in a field contaminated sediment. An additional contract was established with ARCHE (02-230102-0413: \$18,000) to develop a basis for addressing bioavailability of sediment-associated Ni to marine and estuarine organisms, based on data generated through the Project entitled "Marine/Estuarine Sediment Toxicity" that is described below</p> <ul style="list-style-type: none"> • 2015 Task Sediment EQS Scientific Support (\$40,000) <p>The Project entitled "Marine/Estuarine Sediment Toxicity" will create the building blocks necessary to support a bioavailability-based EQS for Ni in marine and estuarine sediments. Two 2011 contracts (Contract 2011-23 \$131,089 and Contract 2011-24 \$18,750) supported the project of developing baseline ecotoxicity data for marine species. Contracts 02-230502-0113 (University of South Carolina \$35,000) and 02-230503-0113 (Dr. GT Chandler \$17,000) supported the continuation of generation of relevant high quality ecotoxicity data and the publication of the results in the peer review literature. Contract 02-230102-0413 will allow ARCHE to develop models based on the outcome of the toxicity testing. The next step of the project is expansion of the current dataset to include sediment data on additional marine sediment species 02-230505-0014. New Species Data Generation was budgeted for 2014 but was canceled and money returned due to changes in research priorities towards tropical data generation. Sediment data generated under the tropical research project (EQS Water Program) will contribute to knowledge in this area.</p>

Program	EQS Program – Sediment Sub-program					
	<i>NB: The EQS Program is divided into four sub-programs to group Projects that address issues pertaining to a specific environmental compartment (Water, Sediment, Soil) or management process (Engagement). One fiche will be prepared to describe the projects for which new funds are requested for each of the four EQS Sub-projects.</i>					
Project Title	Bioavailability based Sediment EQS (02-2.3.01.00-0000) Marine/estuarine sediment toxicity (02-2.3.05.00-0000)					
Project Number	as above					
NI Project Manager	C.E. Schlekot and E. Garman					
Contractor	Ghent U, ARCHE, U Michigan, Wright State U, USC, T. Chandler, Kent State University, wca environment					
Fiche Completion Date	May 2015					
Link to Program Objective	Gain acceptance of new methods for determining effects of Ni in sediment to avoid a "one size fits all" approach to sediment regulations which can lead to inappropriate restrictions on operations or remediation activities					
Potential Impact	Incorporation of bioavailability into sediment EQS setting will avoid the use of overly restrictive, worst case sediment regulatory values applied to every scenario					
KPI/Milestone	<ul style="list-style-type: none"> Q2- Position paper on the NI sediment EQS approach Q2- Workshop with regulators to provide update on state of nickel sediment research 					
Total External Budget	Budgeted Pre-2014	Budgeted 2014	Budgeted 2015	Proposed 2016	Proposed 2017	Proposed 2018
Total Budgeted Amount: \$1,157,000	\$1,032,000	\$85,000	\$40,000	\$0	\$0	\$0
Currency: USD						

PROJECT UPDATE

Task: Bioavailability-based Sediment EQS

Background: A multi-year Technical Conclusion i) testing program for nickel in sediments was completed in December 2011 upon delivery to the Danish Environmental Protection Agency (DEPA) of all research reports from the laboratory testing program, field testing program, and conclusion i) group discussions. Delivery of the information package to DEPA fulfilled the requirements outlined in the Nickel EU Risk Assessment conclusion i) that was established in 2008 upon completion of the Existing Substances Risk Assessment of Nickel. In December 2012, DEPA completed the evaluation of the nickel research reports and sediment effects assessment documents and submitted to ECHA a report entitled "Summary report regarding risk management of nickel in relation to chronic toxicity to freshwater sediment organisms", as well as a summary entitled "Conclusion of substance evaluation for transitional dossiers". This multi-year study had the goals of deriving Predicted No Effects Concentrations for sediment-associated nickel (PNEC_{sed}), and for identifying relationships between important sediment parameters and the toxicity of nickel to sediment-dwelling organisms. The study also identified several areas for continued research to address areas of uncertainty related to nickel behavior and toxicity in sediments, such as studies to expand the nickel ecotoxicity sediment database, studies to continue the development of bioavailability relationships, and studies to explore toxicity related to dietary exposure from nickel in sediments.

New Developments: A great deal of progress was made on the development of a bioavailability-based EQS for Ni in sediments. First, sediment toxicity testing at the University of Gent was nearly completed, with new test data generated for four species (*Chironomus riparius*, *Lumbriculus variegatus*, *Tubifex tubifex*, and *Ephoron virgo*) in four sediments. This increased the chronic ecotoxicity database from four to eight species. Bioavailability relationships were determined for the four species that were successfully tested, which allowed these species to be added to the bioavailability-normalized sediment Species Sensitivity Distribution. A PNEC of 118 mg Ni/kg was calculated for a reasonable worst case (RWC) low-binding sediment, which is higher than the previous RWC PNEC of 96 mg Ni/kg that was calculated using only the four previously tested organisms. Results from this study were incorporated into Ni Chemical Safety Reports for the Ni REACH Consortium substances. They will also be used to develop a bioavailability-based EQS_{sed} under the Water Framework Directive, if the Danish EPA's proposal in favor of setting an EQS for Ni in sediment gains support at the European Commission.

In 2015, ECHA announced that they will update the sediment section of the Information Requirements and Chemical Safety Assessment guidance. C. Schlekert (NiPERA) was nominated to the Project Expert Group (PEG) to contribute to the guidance update, based on NiPERA's experience and expertise with concepts like sediment testing and bioavailability relationships in sediments. Additionally, NiPERA co-authored a manuscript on development of a bioavailability-based risk assessment approach for Ni in sediments (submitted to Integrated Environmental Assessment and Management), as well as a position paper on the status of nickel sediment toxicity research and application.

In May 2015, NiPERA hosted a briefing on the latest information available on the effects of Ni to freshwater organisms in the margins of the SETAC Europe Meeting in Barcelona. The specific purpose of the meeting was to present recent breakthroughs in NiPERA-sponsored sediment research to the regulatory scientists and the meeting was attended by over 30 participants, including representatives from ECHA, Member States (including the Netherlands, the UK, France, Italy, Germany, and Denmark), regulatory scientists from other jurisdictions (including Switzerland, Australia, and the US), Nickel Institute Member Company representatives, academic scientists, and representatives of other metals. The briefing successfully communicated recent research on Ni in sediment to the authorities who are responsible for making regulatory decisions on sediment risk assessment in Europe, and highlighted the need to consider field ageing processes when establishing threshold values for sediments.

Task: Marine/Estuarine Sediment Toxicity

Background: This project is designed to provide the building blocks necessary to support a bioavailability-based EQS for Ni in marine and estuarine sediments. The outcomes, conclusions, and lessons learned from the freshwater bioavailability-based sediment EQS program will be applied to research in the marine sediment compartment to further our knowledge of nickel toxicity in marine sediments.

New Developments: A contract was developed with the University of South Carolina and with Dr. G. Chandler to complete the testing on marine/estuarine species. The definitive test on the two marine/estuarine benthic species was completed in June of 2013. Sediments were spiked according to the approach developed by the USGS for freshwater sediments. Sediment spiking began in January and was ended in April, when the spiked sediments were added to toxicity test chambers. Results of the toxicity tests differed for the two test species. The amphipod *L. plumulosus*, which actively manipulates sediments, showed toxicity at high Ni spiked concentrations, whereas the copepod *A. tenuramis*, which resides in sediment pore water, showed no effects at Ni concentrations as high as 692 mg Ni/kg. A second contract was established with Dr. G. Chandler to prepare a peer-review manuscript of the research for publication. The research was published in the November 2014 issue of Environmental Science and Technology.

Program	EQS Program – Water Sub-program <i>NB: The EQS Program is divided into four sub-programs to group Projects that address issues pertaining to a specific environmental compartment (Water, Sediment, Soil) or management process (Engagement). One fiche will be prepared to describe the projects for which new funds are requested for each of the four EQS Sub-projects</i>
Project Title	Environmental Exposure (02-2.3.03.00-0000) Marine Pelagic Studies (02-2.3.04.00-000) Refine Bioavailability Models (02-2.3.06.00-0000) Mixture Toxicity in the Environment (02-2.3.07.00-0000) Tropical Biotic Ligand Model (02-2.3.11.00-0000) Mechanisms of Ni toxicity to aquatic organisms (02-2.3.13.00-0000)
Project Number	as above
NI Project Manager	C.E. Schlekat and E. Garman
Contractor	CANMET, ARCHE, HDR-Hydroqual, Ghent U, Mutch Associates, wca environment, ESA, Manhattan College, Colorado School of Mines, Wilfrid Laurier University, CSIRO, Hydrobiology, eriss, University of Hong Kong
Fiche Completion Date	May 2015
Project Date	Start 2011
	Projected Completion Indefinite
Project Description	<p>These projects provide research support for the development and refinement of methods and data generation for determining nickel toxicity in aquatic ecosystems</p> <p>The Project entitled "Environmental Exposure" is critical to conducting accurate environmental risk assessment of Ni and Ni compounds and is also relevant for determining the appropriate environmental hazard classification of Ni and Ni compounds. This is an ongoing project that has several associated previous contracts 2011-17, 2011-18, 2012-26. Contract 02-230301-0113 provided support for follow-up to the 2012 workshop at ECHA on the use of the Unit World Model for Aquatic Classification. Contract 02-230301-0213 and 02-230301-0114 is an ongoing project with ARCHE to evaluate the nickel Ecotoxicity Reference Values, based on new data that have become available since the ERV development in 2008. This project will be completed in 2015. Contract 02-230301-0313 with CANMET MMSL is an agreement to obtain data for the identification of appropriate classification of Ni ores and concentrates. Task 02-230301-0214 T/D P Validation (\$20,000) was budgeted for 2014 but the project was canceled due to lack of cooperation from funding partners and the money was returned.</p> <ul style="list-style-type: none"> • 2015 Task Rapid Removal of Metal from the Water Column (\$75,000) <p>The objective of the Project entitled "Marine Pelagic Studies" is to develop a predictive bioavailability model for Ni that is relevant for marine and estuarine waters. This model can then be used to normalize marine and estuarine Ni toxicity data, and to serve as the basis for a bioavailability-based Ni EQS for marine and estuarine waters. The first task in this project is the development of a model that can predict Ni speciation in marine and estuarine waters. The next task is to link the Ni speciation model with a marine and estuarine Ni toxicity database, which will calculate a marine PNEC as a function of water chemistry. 02-230403-0114 Marine Pelagic Toxicity Data Evaluation was contracted with Wilfrid Laurier University in Quarter 4 of 2014.</p> <p>The Project entitled "Refine Bioavailability Models" will broaden the geochemical and ecological boundaries of the currently available Ni bioavailability models (BLMs), thereby increasing the range of waters for which they are applicable. Expanding the geochemical and ecological boundaries of the Ni BLMs will address concerns expressed by regulators over the range of species and geochemical conditions covered by the BLMs, and will increase the scientific justification for bioavailability-based EQS approaches for both within the EU and for non-EU jurisdictions. Bioavailability based approaches are critical to prevent adverse effects on the production and use of nickel. This is an ongoing project that has several associated contracts 2011-05, 2012-20, 2012-37, 2012-38, 02-230602-0112, 02-230602-0312. Results of initial research indicated the need for a follow-up study, and this was executed using contracts 02-230602-0214 and 02-500900-201407.</p>

Program	EQS Program – Water Sub-program <i>NB The EQS Program is divided into four sub-programs to group Projects that address issues pertaining to a specific environmental compartment (Water, Sediment, Soil) or management process (Engagement). One fiche will be prepared to describe the projects for which new funds are requested for each of the four EQS Sub-projects.</i>
Project Title	Environmental Exposure (02-2.3.03.00-0000) Marine Pelagic Studies (02-2.3.04.00-000) Refine Bioavailability Models (02-2.3.06.00-0000) Mixture Toxicity in the Environment (02-2.3.07.00-0000) Tropical Biotic Ligand Model (02-2.3.11.00-0000) Mechanisms of Ni toxicity to aquatic organisms (02-2.3.13.00-0000)
Project Number	as above
NI Project Manager	C.E. Schiekat and E. Garman
Contractor	CANMET, ARCHE, HDR-Hydroqual, Ghent U, Mutch Associates, wca environment, ESA, Manhattan College, Colorado School of Mines, Wilfrid Laurier University, CSIRO, Hydrobiology, eriss, University of Hong Kong
Fiche Completion Date	May 2015
	<p>The Project entitled <i>"Mixture Toxicity in the Environment"</i> evaluates the mechanisms of metals mixtures toxicity and potential interactions in the environment with the goal of developing efficient and economic bioavailability-based mixtures modeling tools in soil, water, and sediment. Lack of data on metals mixtures can be used by regulators to justify additional Assessment Factors or more stringent EQS values to account for uncertainty. The development of risk assessment approaches for assessing metals mixtures in the environment will ensure that EQS values are appropriately protective of single and multiple metal exposures. This is an ongoing project that has several associated contracts. 2012-30. Contract 02-230701-0013 with Ghent University is a desktop exercise to look at theoretical risk posed by metals at low level concentrations. Contract 02-230702-0013 is a contract with Manhattan College to publish the results of a project that evaluated the applicability and effectiveness of several multi-metal biotic ligand models. 02-230701-0113 and 02-230701-0213 are contracts with Colorado School of Mines to examine acute toxicity of combinations of nickel, zinc, cadmium, and copper to <i>Daphnia magna</i>. 02-230701-0114 Evaluate mechanisms of mixture toxicity and 02-230703-0114 Multi-metallic BLM development & Eval was contracted with Ghent University to evaluate the results of the desktop exercise in the laboratory (Phase 2). This project is cofunded by four partners.</p> <ul style="list-style-type: none"> • 2015 Task: Multi-metallic Environmental Data Generation (\$75,000) 02-230703-0115 <p>The Project entitled <i>"Tropical Biotic Ligand Model"</i> will develop the science necessary to apply the current Ni BLMs, which have been developed in temperate waters with temperate species, to tropical waters and to tropical aquatic species. Direct application of the ecotoxicological data and risk assessment approaches to tropical regions such as Southeast Asia may not be appropriate due to differences in climate, geochemistry, animal and plant physiology, and the taxonomic composition of endemic ecosystems. The validity of current BLMs in tropical systems needs to be demonstrated before bioavailability-based approaches are accepted as the basis for setting environmental quality standards in tropical systems. Contract 02-231101-0013 supported a workshop in Vietnam to lay the groundwork for introducing bioavailability concepts in Asia. Contracts 02-231401-0114, 02-231401-0214, and 02-231401-0314 supported a workshop in Singapore to review the state of the science of the environmental risk assessment of nickel in Southeast Asia, the adjoining western south Pacific and other tropical regions where lateritic ores are being developed. Based on discussions at the workshop, contracts were established to initiate research on exposure (02-231401-0514), effects (02-231401-0414 and 02-231401-0614), and risk characterization (02-231401-0514).</p> <p>A project entitled <i>"Mechanisms of Ni toxicity to aquatic organisms"</i> was established in 2014. This Project focuses on synthesizing the latest available information on the mechanisms of Ni toxicity to aquatic organisms. This is important because the Ni Biotic Ligand Model (BLM), which serves as the basis for the bioavailability-based approaches used to great advantage under the Water Framework Directive and REACH, is a mechanistically-based model. For regulatory agencies in other geographical regions to adopt the BLM as the basis for Ni Environmental Quality Standards, the mechanistic basis of the model must be evaluated through the lens of newly available data. To do so in an efficient way, a small workshop was held that will include researchers who are actively addressing Ni mechanistic toxicity, with the ultimate goal of publishing a critical review of the current scientific information in the peer-reviewed scientific</p>

Program	EQS Program – Water Sub-program					
	<i>NB: The EQS Program is divided into four sub-programs to group Projects that address issues pertaining to a specific environmental compartment (Water, Sediment, Soil) or management process (Engagement). One fiche will be prepared to describe the projects for which new funds are requested for each of the four EQS Sub-projects</i>					
Project Title	Environmental Exposure (02-2.3.03.00-0000) Marine Pelagic Studies (02-2.3.04.00-000) Refine Bioavailability Models (02-2.3.06.00-0000) Mixture Toxicity in the Environment (02-2.3.07.00-0000) Tropical Biotic Ligand Model (02-2.3.11.00-0000) Mechanisms of Ni toxicity to aquatic organisms (02-2.3.13.00-0000)					
Project Number	as above					
NI Project Manager	C.E. Schlekot and E. Garman					
Contractor	CANMET, ARCHE, HDR-Hydroqual, Ghent U, Mutch Associates, wca environment, ESA, Manhattan College, Colorado School of Mines, Wilfrid Laurier University, CSIRO, Hydrobiology, eriss, University of Hong Kong					
Fiche Completion Date	May 2015					
	literature A workshop of experts in this subject took place in November 2014, and was supported by Contract 02-231301-0114 Based on the outcome of the workshop, Contract 02-231301-0214 was established to perform a critical review of the available literature and to publish a manuscript by the end of 2015					
Link to Program Objective	Develop and refine methods for determining nickel effects in water to avoid excessive cost impacts on shipping, operations, etc from regulations based on outdated conservative approaches					
Potential Impact	Aquatic toxicity data, bioavailability-based approaches, assessment of mixtures toxicity, and regional expansion of bioavailability models are necessary steps to prevent regulations from causing adverse impacts on shipping, operations, etc to Ni producers and downstream users of Ni					
KPI/Milestone	<ul style="list-style-type: none"> Q2- Meeting of Tropical Risk Assessment Project Steering Team Q3- Weight of evidence paper to support Nickel Rapid Removal from the Water Column Q4- Phase 2 Report for Ghent University metal mixtures project 					
Total External Budget	Budgeted Pre-2014	Budgeted 2014	Budgeted 2015	Proposed 2016	Proposed 2017	Proposed 2018
Total Budgeted Amount: \$1,580,000	\$715,000	\$290,000	\$150,000	\$250,000	\$175,000	\$0
Currency: USD						

PROJECT UPDATE

Background: These projects provide research support for the development and refinement of methods and data generation for determining nickel toxicity in aquatic ecosystems

Task: Environmental Exposure

Research and advocacy efforts are ongoing with regards to the use of the Unit World Model for aquatic classification. A final report for the multi-metallic project entitled "Metal Classification using a Unit World Model (TICKET-UWM)" was received in January, 2013. This project was co-sponsored by NiPERA, ICA, IZA, CDI, ILZRO, and the Aluminum REACH Consortia. The aim of the project was to employ the Unit World Model (UWM) to assess the fate and effects of chemicals through simultaneous consideration of chemical partitioning, transport, reactivity, and bioavailability in order model removal of metals from the water column. Material requested during the 2012 ECHA workshop was sent to ECHA in a follow-up package in February 2013. Additional calculations of rapid degradation in flowing systems was completed in 2015. A new NiPERA co-sponsored project will begin in 2015 to provide laboratory-based empirical evidence for rapid removal from the water column. This testing will be conducted at CANMET MMSL and will look at removal from the water column using a modified transformation/dissolution (T/D) protocol and a field collected sediment.

The project to evaluate the nickel Ecotoxicity Reference Values, based on new data that have become available since the ERV development in 2008, is well underway. The chronic toxicity database was reviewed and any new 2008-2013 data were added. The normalized Species Sensitivity Distribution was calculated and the revised chronic ERV was evaluated in 2014. A draft final report was received in 2014. The analysis is being evaluated to determine if a change in the chronic ERV could be supported. In April 2014, an evaluation of the existing acute biotic ligand models was completed in order to validate the models for use in development of an acute Species Sensitivity Distribution and ERV. The evaluation suggested the use of a unified acute nickel biotic ligand model, however, additional sensitivity calculations are being performed in 2015.

The contract with CANMET MMSL for T/D testing of Ni ores and concentrates was signed in 2013 for the testing of 1 nickel oxide and 3 nickel ore samples. Of the nickel ore samples, two samples are laterite ores and one sample is a synthetic pentlandite sample. In April 2014, testing on three of the four samples were complete. Testing on the pentlandite sample was delayed due to availability of the material but testing began in Q2 2015.

Task: Marine Pelagic Studies

Testing to develop a marine Biotic Ligand Model for nickel is scheduled to begin in summer 2015. This work follows from the previous NSERC Cooperative Research Development (CRD) grant entitled "Towards Marine Biotic Ligand Models". Work will be conducted at Wilfred Laurier University and will focus on investigating nickel speciation and toxicity in marine waters. An application for an NSERC CRD grant was submitted in Q2 2015. If awarded, this grant will match the funds provided by industry. A project kickoff meeting is scheduled for June 2015.

Task: Refine Bioavailability Models

The biotic ligand models (BLMs) for nickel have been developed and validated using North American and European laboratory test species and natural waters. However, there is regulatory interest in accounting for the bioavailability of nickel in regions outside of those for which the models were originally developed. This project assesses the applicability of these chronic nickel models to freshwaters in a different geographic and biological region; namely Australia. Five natural waters that represent the range of different water chemistry characteristics found across Australia have been collected for testing. Standard Australian aquatic test species were tested for their sensitivity to nickel in each of these waters, exhibiting a range of sensitivities depending on the water chemistry. The collection of the waters and laboratory testing was performed using support from Contract 02-230602-0312 (Ecotox Services Australia). Preliminary nickel BLM predictions for these waters were performed using support from Contract 02-230602-0112 (wca environment Ltd).

The predictions for the test organisms were within a factor of two of the laboratory test results for the majority of test waters, demonstrating that the chronic nickel BLM can be applied to species from very different habitats and ecosystems from those for which the models were originally developed. However, the BLMs did not predict toxicity well in waters of low hardness, which are more widely distributed in Australia compared with Europe or North America. Several possible solutions to this issue were identified in a preliminary report that was shared with the Australian Water Quality Guideline Committee.

A meeting with the Committee was set up in the margins of the SETAC Australasia meeting in Adelaide, Australia, in September 2014. Support for wca environment's preparation and participation in the meeting and other meeting expenses was provided from Contract 02-230602-0114. The meeting was attended by all Committee members, who indicated further support for the concept of developing a bioavailability-based Water Quality Guideline (WQG) for Ni.

Two possible approaches for addressing the relatively poor predictions of the Ni BLMs at low water hardness. One was to consider using empirical modeling approaches, rather than the mechanistic-based BLM framework. Results were presented showing that

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empirical models succeeded in robust relationships between water chemistry parameters and toxicity. The other approach was to perform additional testing with one of the test organisms, *Hydra vendissima*, which can tolerate very low water hardness conditions, and to use these results as the basis for modifying the BLM parameters. The Committee supported the latter approach.

To this end, Contract 02-230602-0214 was established with the Australian Government's Department of the Environment Environmental Research Institute of the Supervising Scientist (eriss) to determine relationships between Ni toxicity and hardness for water hardness values ranging between 1.1 and 58 mg CaCO₃/L. Another contract, 02-500900-201407, was established with WCA Environment using research contingency funds to provide support to model the resulting data, to modify the existing Ni BLMs based on the results, and to develop a proposal for how the resulting model and ecotoxicity data can be used to develop a bioavailability-based WQG for Ni in Australia. It is anticipated that the research will be completed by Q2 2015, and that the bioavailability modeling and report development will be completed by Q3 2015.

Task: Mixture Toxicity in the Environment

The environmental fate and biological effects of metal mixtures remains an uncertainty and research is needed to assess metal mixtures in the environment and to develop efficient and economic science-based risk assessment approaches to meet future regulatory demands. Several metals mixtures projects are ongoing. First, NiPERA along with the Copper Alliance, International Zinc Association, and Rio Tinto sponsored the Metal Mixture Modeling Evaluation (MMME) research project and workshop to comparatively evaluate the existing bioavailability-based approaches for assessing metal mixtures in freshwater systems. The comparative modeling evaluation began in 2012 and consisted of five phases: 1) identify research groups that had published, or were working on developing, bioavailability based models for metal mixtures, 2) gather the dataset of metal-mixture exposure and effects information, 3) model the datasets, 4) convene a workshop where each group could present the results, and 5) publish the results. The workshop was held in Brussels in May of 2012. Four research groups participated in the modelling exercise. The workshop highlighted three main points. First, bioavailability models calibrated for single-metal exposures can be integrated to assess mixture scenarios. Second, the available modeling approaches perform consistently well for various metal combinations, organisms, and endpoints. Third, several technical advancements were identified that should be incorporated into speciation models and environmental risk assessments for metals. The results of the workshop and modeling exercise were published in the journal *Environmental Toxicology and Chemistry* as a Special Section on Mixtures Models in March 2015.

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The Colorado School of Mines project is aimed at generating data for modeling the toxicity of Cd-Cu, Cd-Zn, Cu-Ni, Cu-Zn, and Cd-Cu-Zn mixtures to *Daphnia magna* in acute exposures. The research showed that the use of simple additivity models were insufficient to describe the toxicity results. Mechanistically-based mixtures biotic ligand models were better predictors of toxicity. Research is also being conducted to examine more metals mixtures combinations in laboratory synthetic waters and natural field waters. This research will be completed in 2015.

Task: Tropical Biotic Ligand Model

As a first step in this project, NiPERA sponsored a workshop in Singapore on April 29-30 2014 to review the state of the science of the environmental risk assessment of nickel in Southeast Asia and other tropical regions where lateritic ores are being developed. The aims of the workshop were to prioritize areas of research need that will enable Nickel Institute members to deal with the complex environmental risk assessment issues that are associated with this region, and to provide the scientific basis for any future regulatory actions that require the development of Environmental Quality Standards for Ni. Support for the workshop and travel for workshop participants was provided by 02-231401-0114, 02-231401-0124, and 02-231401-0134. The workshop was attended by over twenty participants from NI Member Companies, regional experts on tropical environmental risk assessment, and regulatory scientists from Indonesia, the Philippines, and Australia. Workshop participants strongly supported the NiPERA initiative, and expressed a strong interest in following the progress of the research program that is to follow. Several issues were identified as critical for the research program to focus on, including a prioritization of marine and estuarine habitats (over and above freshwater and soil habitats) in terms of Ni ecotoxicity and exposure data collection, validation of bioavailability models for tropical systems, gaining an understanding of the chemical forms of Ni that are present in the receiving environments that are influenced by Ni operations, and, identifying the importance of Ni relative to other prevalent stressors experienced by regional lateritic operations. A practical recommendation was to utilize existing information whenever possible, including baseline chemical and biological monitoring data.

Following the workshop, NiPERA identified a subset of workshop participants to participate in a peer-review panel that would assist in determining the direction of the research project as well as participate in discussions on the interpretation and synthesis of

PROJECT UPDATE

results The members of the Tropical Environmental Risk Assessment Peer-review Panel (TERAP) include Dr Jenny Stauber (CSIRO), Dr Graham Merrington (wca environment), Dr Ross Smith (Hydrobiology Ltd), Prof Kenny Leung (U Hong Kong), Sophie Le Pennec (Eramet), and Steve Brown (PT-INCO/Vale)

The TERAP group met in the margins of SETAC Australasia in Adelaide, Australia on September 18th, 2014 to finalize the overall organization of the research program, and to make decisions on proposals that had been submitted for funding consideration In terms of overall organization, the group decided that a risk assessment format was appropriate, with emphasis on exposure and effects data gathering as well as developing a tiered risk characterization process that considered the impact of bioavailability normalization

Based on the discussions from this meeting, several contracts were established that allowed the work to begin. These included

- I Contract 02-231401-0414 was established with CSIRO in Sydney, Australia, to perform a critical review of existing ecotoxicity data on tropical species, and to then perform ecotoxicity testing on data gaps agreed to by the TERAP group. Ecotoxicity testing performed by CSIRO will focus on marine and freshwater organisms, as well as sediment organisms.
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- III Contract 02-231401-0514 was established with wca environment to develop a tiered approach for risk characterization
- IV Contract 02-231401-0614 was established with the University of Hong Kong to perform toxicity tests on a number of freshwater and marine tropical species that are readily available in the laboratory, and which will help to broaden the existing database without duplicating CSIRO's toxicity testing efforts

A project management plan was prepared involving teleconferences and face-to-face meetings for 2015 It is anticipated that exposure data collection and the critical review of existing ecotoxicity data would be completed by the end of Q2 2015 At this point, decisions would need to be made on the need for collecting additional exposure data, and the most important species for which ecotoxicity data are required

Task: Mechanisms of Ni toxicity to aquatic organisms

This Project focuses on synthesizing the latest available information on the mechanisms of Ni toxicity to aquatic organisms This is important because the Ni Biotic Ligand Model (BLM), which serves as the basis for the bioavailability-based approaches used to great advantage under the Water Framework Directive and REACH, is a mechanistically-based model For regulatory agencies in other geographical regions to adopt the BLM as the basis for Ni Environmental Quality Standards, the mechanistic basis of the model must be evaluated through the lens of newly available data

To do so in an efficient way, a small workshop was held on November 9th, 2014, in the margins of the SETAC North America meeting in Vancouver, Canada The following experts participated in the workshop Adam Peters (wca), David Costello (Kent State), Karel De Schampelaere (Ghent U), Adam Ryan (HDR Hydroqual), Emily Garman (NiPERA), Chris Schlekot (NiPERA), Kevin Brix (UBC), Robert Santore (HDR Hydroqual), Mike McLaughlin (CSIRO/U Adelaide), Jenny Stauber (CSIRO), Chris Wood (McMaster U/UBC) The workshop was supported from contract 02-231301-0114

A number of possible mechanisms were identified by the group, including inhibition of Ca, Mg, and Fe homeostasis, impacts on energy metabolism, and oxidative stress The group recommended using the Adverse Outcome Pathway (AOP) process to frame the issue, the AOP process links effects at the molecular level of interaction (e.g., between Ni and a biological ligand) with an outcome that is detrimental to the organism in question (e.g., reproduction in a fish) The explanation of Ni toxicity has been elusive despite extensive work to discover these mechanisms, and is in contrast with other metals like Cu and Zn for which the mechanisms are well-understood For this reason, interest among the group was high C Wood of McMaster U was asked to provide an overview of the workshop to the SETAC Metals Advisory Group meeting that took place the day following the workshop (November 10th, 2014)

As a consequence of the interest generated in this topic by the workshop, a contract was established with K Brix to perform a critical review of the literature, make recommendations on achievable research that would solidify understanding of Ni toxicity mechanisms, and publish the results in a peer-reviewed manuscript by the end of 2015 Dr Brix planned to transition from U British Columbia to Queens U early in 2015, and therefore contract 02-231301-0214 was made with Queens U d

Program	EQS Program – Water Sub-program <i>NB: The EQS Program is divided into four sub-programs to group Projects that address issues pertaining to a specific environmental compartment (Water, Sediment, Soil) or management process (Engagement). One fiche will be prepared to describe the projects for which new funds are requested for each of the four EQS Sub-projects.</i>
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Project Number	as above
NI Project Manager	C.E. Schlekot and E. Garman
Contractor	CANMET, ARCHE, HDR-Hydroqual, Ghent U, Mutch Associates, wca environment, ESA, Manhattan College, Colorado School of Mines, Wilfrid Laurier University, CSIRO, Hydrobiology, eriss, University of Hong Kong
Fiche Completion Date	May 2015
Project Date	Start 2011
	Projected Completion Indefinite
Project Description	<p>These projects provide research support for the development and refinement of methods and data generation for determining nickel toxicity in aquatic ecosystems</p> <p>The Project entitled “Environmental Exposure” is critical to conducting accurate environmental risk assessment of Ni and Ni compounds and is also relevant for determining the appropriate environmental hazard classification of Ni and Ni compounds. This is an ongoing project that has several associated previous contracts: 2011-17, 2011-18, 2012-26. Contract 02-230301-0113 provided support for follow-up to the 2012 workshop at ECHA on the use of the Unit World Model for Aquatic Classification. Contract 02-230301-0213 and 02-230301-0114 is an ongoing project with ARCHE to evaluate the nickel Ecotoxicity Reference Values, based on new data that have become available since the ERV development in 2008. This project will be completed in 2015. Contract 02-230301-0313 with CANMET MMSL is an agreement to obtain data for the identification of appropriate classification of Ni ores and concentrates. Task 02-230301-0214 T/D P Validation (\$20,000) was budgeted for 2014 but the project was canceled due to lack of cooperation from funding partners and the money was returned</p> <ul style="list-style-type: none"> • 2015 Task: Rapid Removal of Metal from the Water Column (\$75,000) <p>The objective of the Project entitled “Marine Pelagic Studies” is to develop a predictive bioavailability model for Ni that is relevant for marine and estuarine waters. This model can then be used to normalize marine and estuarine Ni toxicity data, and to serve as the basis for a bioavailability-based Ni EQS for marine and estuarine waters. The first task in this project is the development of a model that can predict Ni speciation in marine and estuarine waters. The next task is to link the Ni speciation model with a marine and estuarine Ni toxicity database, which will calculate a marine PNEC as a function of water chemistry. 02-230403-0114 Marine Pelagic Toxicity Data Evaluation was contracted with Wilfrid Laurier University in Quarter 4 of 2014</p> <p>The Project entitled “Refine Bioavailability Models” will broaden the geochemical and ecological boundaries of the currently available Ni bioavailability models (BLMs), thereby increasing the range of waters for which they are applicable. Expanding the geochemical and ecological boundaries of the Ni BLMs will address concerns expressed by regulators over the range of species and geochemical conditions covered by the BLMs, and will increase the scientific justification for bioavailability-based EQS approaches for both within the EU and for non-EU jurisdictions. Bioavailability based approaches are critical to prevent adverse effects on the production and use of nickel. This is an ongoing project that has several associated contracts: 2011-05, 2012-20, 2012-37, 2012-38, 02-230602-0112, 02-230602-0312. Results of initial research indicated the need for a follow-up study, and this was executed using contracts: 02-230602-0214 and 02-500900-201407</p>

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Fiche Completion Date	May 2015
	<p>The Project entitled "Mixture Toxicity in the Environment" evaluates the mechanisms of metals mixtures toxicity and potential interactions in the environment with the goal of developing efficient and economic bioavailability-based mixtures modeling tools in soil, water, and sediment. Lack of data on metals mixtures can be used by regulators to justify additional Assessment Factors or more stringent EQS values to account for uncertainty. The development of risk assessment approaches for assessing metals mixtures in the environment will ensure that EQS values are appropriately protective of single and multiple metal exposures. This is an ongoing project that has several associated contracts. 2012-30 Contract 02-230701-0013 with Ghent University is a desktop exercise to look at theoretical risk posed by metals at low level concentrations. Contract 02-230702-0013 is a contract with Manhattan College to publish the results of a project that evaluated the applicability and effectiveness of several multi-metal biotic ligand models. 02-230701-0113 and 02-230701-0213 are contracts with Colorado School of Mines to examine acute toxicity of combinations of nickel, zinc, cadmium, and copper to <i>Daphnia magna</i>. 02-230701-0114 Evaluate mechanisms of mixture toxicity and 02-230703-0114 Multi-metallic BLM development & Eval was contracted with Ghent University to evaluate the results of the desktop exercise in the laboratory (Phase 2). This project is cofunded by four partners</p> <ul style="list-style-type: none"> • 2015 Task: Multi-metallic Environmental Data Generation (\$75,000) 02-230703-0115 <p>The Project entitled "Tropical Biotic Ligand Model" will develop the science necessary to apply the current Ni BLMs, which have been developed in temperate waters with temperate species, to tropical waters and to tropical aquatic species. Direct application of the ecotoxicological data and risk assessment approaches to tropical regions such as Southeast Asia may not be appropriate due to differences in climate, geochemistry, animal and plant physiology, and the taxonomic composition of endemic ecosystems. The validity of current BLMs in tropical systems needs to be demonstrated before bioavailability-based approaches are accepted as the basis for setting environmental quality standards in tropical systems. Contract 02-231101-0013 supported a workshop in Vietnam to lay the groundwork for introducing bioavailability concepts in Asia. Contracts 02-231401-0114, 02-231401-0214, and 02-231401-0314 supported a workshop in Singapore to review the state of the science of the environmental risk assessment of nickel in Southeast Asia, the adjoining western south Pacific and other tropical regions where latent ores are being developed. Based on discussions at the workshop, contracts were established to initiate research on exposure (02-231401-0514), effects (02-231401-0414 and 02-231401-0614), and risk characterization (02-231401-0514).</p> <p>A project entitled "Mechanisms of Ni toxicity to aquatic organisms" was established in 2014. This Project focuses on synthesizing the latest available information on the mechanisms of Ni toxicity to aquatic organisms. This is important because the Ni Biotic Ligand Model (BLM), which serves as the basis for the bioavailability-based approaches used to great advantage under the Water Framework Directive and REACH, is a mechanistically-based model. For regulatory agencies in other geographical regions to adopt the BLM as the basis for Ni Environmental Quality Standards, the mechanistic basis of the model must be evaluated through the lens of newly available data. To do so in an efficient way, a small workshop was held that will include researchers who are actively addressing Ni mechanistic toxicity, with the ultimate goal of publishing a critical review of the current scientific information in the peer-reviewed scientific</p>

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Link to Program Objective	Develop and refine methods for determining nickel effects in water to avoid excessive cost impacts on shipping, operations, etc from regulations based on outdated conservative approaches					
Potential Impact	Aquatic toxicity data, bioavailability-based approaches, assessment of mixtures toxicity, and regional expansion of bioavailability models are necessary steps to prevent regulations from causing adverse impacts on shipping, operations, etc to Ni producers and downstream users of Ni					
KPI/Milestone	<ul style="list-style-type: none"> Q2- Meeting of Tropical Risk Assessment Project Steering Team Q3- Weight of evidence paper to support Nickel Rapid Removal from the Water Column Q4- Phase 2 Report for Ghent University metal mixtures project 					
Total External Budget	Budgeted Pre-2014	Budgeted 2014	Budgeted 2015	Proposed 2016	Proposed 2017	Proposed 2018
Total Budgeted Amount: \$1,580,000	\$715,000	\$290,000	\$150,000	\$250,000	\$175,000	\$0
Currency: USD						

PROJECT UPDATE

Background: These projects provide research support for the development and refinement of methods and data generation for determining nickel toxicity in aquatic ecosystems

Task: Environmental Exposure

Research and advocacy efforts are ongoing with regards to the use of the Unit World Model for aquatic classification. A final report for the multi-metallic project entitled "Metal Classification using a Unit World Model (TICKET-UWM)" was received in January, 2013. This project was co-sponsored by NiPERA, ICA, IZA, CDI, ILZRO, and the Aluminum REACH Consortia. The aim of the project was to employ the Unit World Model (UWM) to assess the fate and effects of chemicals through simultaneous consideration of chemical partitioning, transport, reactivity, and bioavailability in order model removal of metals from the water column. Material requested during the 2012 ECHA workshop was sent to ECHA in a follow-up package in February 2013. Additional calculations of rapid degradation in flowing systems was completed in 2015. A new NiPERA co-sponsored project will begin in 2015 to provide laboratory-based empirical evidence for rapid removal from the water column. This testing will be conducted at CANMET MMSL and will look at removal from the water column using a modified transformation/dissolution (T/D) protocol and a field collected sediment.

The project to evaluate the nickel Ecotoxicity Reference Values, based on new data that have become available since the ERV development in 2008, is well underway. The chronic toxicity database was reviewed and any new 2008-2013 data were added. The normalized Species Sensitivity Distribution was calculated and the revised chronic ERV was evaluated in 2014. A draft final report was received in 2014. The analysis is being evaluated to determine if a change in the chronic ERV could be supported. In April 2014, an evaluation of the existing acute biotic ligand models was completed in order to validate the models for use in development of an acute Species Sensitivity Distribution and ERV. The evaluation suggested the use of a unified acute nickel biotic ligand model, however, additional sensitivity calculations are being performed in 2015.

The contract with CANMET MMSL for T/D testing of Ni ores and concentrates was signed in 2013 for the testing of 1 nickel oxide and 3 nickel ore samples. Of the nickel ore samples, two samples are laterite ores and one sample is a synthetic pentlandite sample. In April 2014, testing on three of the four samples were complete. Testing on the pentlandite sample was delayed due to availability of the material but testing began in Q2 2015.

Task: Marine Pelagic Studies

Testing to develop a marine Biotic Ligand Model for nickel is scheduled to begin in summer 2015. This work follows from the previous NSERC Cooperative Research Development (CRD) grant entitled "Towards Marine Biotic Ligand Models". Work will be conducted at Wilfred Laurier University and will focus on investigating nickel speciation and toxicity in marine waters. An application for an NSERC CRD grant was submitted in Q2 2015. If awarded, this grant will match the funds provided by industry. A project kickoff meeting is scheduled for June 2015.

Task: Refine Bioavailability Models

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- ii Contract 02-231401-0514 was established with Hydrobiology in Brisbane, Australia, to collect exposure data from the targeted region (Southeast Asia and Melanesia). Targeted exposure data includes Ni in relevant environmental compartments (water, sediment, and soil) as well as factors that are known to affect Ni toxicity. In order to ensure data quality, a screening approach was developed to critically review identified data. Questionnaires were developed and sent to contacts from the region, including NI Member Companies, government officials, and many other potential sources.
- iii Contract 02-231401-0514 was established with wca environment to develop a tiered approach for risk characterization.
- iv Contract 02-231401-0614 was established with the University of Hong Kong to perform toxicity tests on a number of freshwater and marine tropical species that are readily available in the laboratory, and which will help to broaden the existing database without duplicating CSIRO's toxicity testing efforts.

A project management plan was prepared involving teleconferences and face-to-face meetings for 2015. It is anticipated that exposure data collection and the critical review of existing ecotoxicity data would be completed by the end of Q2 2015. At this point, decisions would need to be made on the need for collecting additional exposure data, and the most important species for which ecotoxicity data are required.

Task: Mechanisms of Ni toxicity to aquatic organisms

This Project focuses on synthesizing the latest available information on the mechanisms of Ni toxicity to aquatic organisms. This is important because the Ni Biotic Ligand Model (BLM), which serves as the basis for the bioavailability-based approaches used to great advantage under the Water Framework Directive and REACH, is a mechanistically-based model. For regulatory agencies in other geographical regions to adopt the BLM as the basis for Ni Environmental Quality Standards, the mechanistic basis of the model must be evaluated through the lens of newly available data.

To do so in an efficient way, a small workshop was held on November 9th, 2014, in the margins of the SETAC North America meeting in Vancouver, Canada. The following experts participated in the workshop: Adam Peters (wca), David Costello (Kent State), Karel De Schampelaere (Ghent U), Adam Ryan (HDR Hydroqual), Emily Garman (NiPERA), Chris Schlegel (NiPERA), Kevin Brix (UBC), Robert Santore (HDR Hydroqual), Mike McLaughlin (CSIRO/U. Adelaide), Jenny Stauber (CSIRO), Chris Wood (McMaster U/UBC). The workshop was supported from contract 02-231301-0114.

A number of possible mechanisms were identified by the group, including inhibition of Ca, Mg, and Fe homeostasis, impacts on energy metabolism, and oxidative stress. The group recommended using the Adverse Outcome Pathway (AOP) process to frame the issue; the AOP process links effects at the molecular level of interaction (e.g., between Ni and a biological ligand) with an outcome that is detrimental to the organism in question (e.g., reproduction in a fish). The explanation of Ni toxicity has been elusive despite extensive work to discover these mechanisms, and is in contrast with other metals like Cu and Zn for which the mechanisms are well-understood. For this reason, interest among the group was high. C. Wood of McMaster U. was asked to provide an overview of the workshop to the SETAC Metals Advisory Group meeting that took place the day following the workshop (November 10th, 2014).

As a consequence of the interest generated in this topic by the workshop, a contract was established with K. Brix to perform a critical review of the literature, make recommendations on achievable research that would solidify understanding of Ni toxicity mechanisms, and publish the results in a peer-reviewed manuscript by the end of 2015. Dr. Brix planned to transition from U. British Columbia to Queens U. early in 2015, and therefore contract 02-231301-0214 was made with Queens U.

Program	Nickel Metal Classification Program					
Project Title	Nickel Metal Related Studies					
Project Number	02-1.1.02.00-0000					
NI Project Manager	A. Oller and T. Lyons-Darden					
Contractor	Product Safety Labs					
Fiche Completion Date	April 2015					
Project Date	Start 2011					
	Projected Completion 2015 (or indicate "Indefinite")					
Project Description	<p>Task 02-110203-0113 (for nickel oxide and nickel dihydroxide) and 02-110203-0213 (for nickel chloride) Acute Inhalation Studies The existing data for acute inhalation toxicity of nickel substances was sparse and not sufficient to validate the bioaccessibility-based read across approach for classification via the inhalation route of exposure Studies completed in 2013 could be incorporated into a read across approach for the inhalation route in 2014 at a future date (no additional funding needed)</p> <p>Task 02-110201-0115 Science Dissemination tour</p> <p>Task 02-110204-0015 Non-linear meta-analysis of cancer risks in nickel workers</p>					
Link to Program Objective	This project aims at strengthening the read across approach for the inhalation toxicity of nickel substances and securing additional support from epidemiological studies for the lack of carcinogenicity of nickel metal					
Potential Impact	<ul style="list-style-type: none"> Will strengthen the bioaccessibility-based read across and allow for the drafting of a manuscript for the inhalation route of exposure Conducting meetings with NI member company representatives and/or key regulatory scientists to deliver messages regarding new data (e.g., lack of carcinogenicity of nickel metal) and risk assessment approaches (e.g., dosimetry) developed by NiPERA The reanalysis of the high nickel alloy cohort can provide better quantitative data in support of lack of carcinogenicity of nickel metal 					
KPI/Milestone	<ul style="list-style-type: none"> Q1 2014 Receive and evaluate study reports/results from acute inhalation studies Q4 2014 Evaluate and if conclusive, incorporate results from in vivo acute inhalation studies into an inhalation read-across approach Q1-Q4 2015 Meeting with key scientists (regulatory or from member companies) worldwide Q3 2015 Review proposal and sign contract for nonlinear risk assessment project 					
Total External Budget	Budgeted Pre-2014	Budgeted 2014	Budgeted 2015	Proposed 2016	Proposed 2017	Proposed 2018
Total Budgeted Amount: \$380,000	\$240,000	\$0	\$40,000	\$100,000	\$0	\$0
Currency: USD						

PROJECT UPDATE

Task Acute Inhalation Studies

Background: Acute inhalation data is currently lacking for several substances and in cases where we have data, additional data points would be useful for further analysis. So in efforts to provide updated data to support the read across approach and correlate to the bioaccessibility data, new acute inhalation data is warranted for nickel oxide black, nickel dihydroxide, and nickel chloride.

New Developments: Acute toxicity testing was conducted by Product Safety Labs with both male and female Sprague-Dawley rats (5 animals per sex/per dose, exception for the final nickel chloride study) exposed via nose-only inhalation for 4 hours and evaluated for an additional 14 days. The results are as follows:

Sample	Exposure	Results
Nickel oxide black (N148) from sample repository	8.3 mg substance/L (previous data for 5 mg/L) Limit test	All animals survived; LC50 > 8.30 mg substance/L
Nickel dihydroxide purchased from Sigma Aldrich	5.16 and 8.26 mg substance/L Limit test	At high dose, only 3 animals survived (2 males and 1 female) At the lower dose, 4 animals survived (1 male and 3 females) Currently, LC50 for females 5.16- 8.26 mg substance/L and LC50 < 5.16 mg substance/L for males Sample used is pure nickel dihydroxide. Need to consider repeating this with sample (containing cobalt) used for previous REACH and bioelution testing
Nickel chloride purchased from Atotech	0.05*, 0.5, 1.0, and 2.0 mg substance/L *at the lowest dose, only 5 males were used)	LC50 for males: 0.053 – 0.52 mg substance/L LC50 for females: 0.52 – 1.09 mg substance/L Based on these results, males and females would have different classifications for GHS/CLP acute toxicity via inhalation (for dust and mists) Additional testing is needed to verify sex-related differences in results
Nickel chloride purchased from Atotech	0.05, 0.5, 1.0, and 2.0 mg substance/L 20 males per exposure group	Repeat of above study, as male data appeared to be inconclusive statistical analysis showed LC50 of 0.3 with a bad "goodness of fit" and a probit of 0.57. Environmental factors, animal stress, technician differences, and weak statistical power due to few animals ***** LC50 for males (new study) 0.608 LC50 for males (combined from new and previous study) 0.5934 LC50 for females (previous study) 0.7464 (not calculated at time of previous study) Based on these results, males and females would have the same classification for GHS/CLP acute

PROJECT UPDATE

	toxicity via inhalation (for dust and mists)
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Bioelution testing was also conducted for correlation with the acute toxicity testing. For nickel oxide black, the results were similar to previously tested samples. For nickel dihydroxide, the bioelution testing significantly differs (releases more nickel) from the previous testing with the Umicore sample that contains cobalt. For nickel chloride, the bioelution testing was repeated for the acute inhalation toxicity study with male animals only, to eliminate possible technician handling differences and to eliminate possible environmental factors by trying to perform all exposures within 1-2 days. This repeat study was completed in Q4 2014 and bioelution testing will commence by end of Q4 2015. It is possible that an inhalation read-across approach could be determined based on the nickel oxide, nickel dihydroxide, and nickel chloride acute inhalation toxicity results.

Task: Science Dissemination Tour

Background: This project corresponds to the science advocacy activities related to holding workshops with regulatory authorities worldwide to inform them about the latest developments on the environmental and human health research programs conducted by the Nickel Institute. Expenses associated with this project include travel and lodging costs, as well as the mailing and preparation of workshop materials.

On February 14, 2013, C. Schlekot and A. Oller (NiPERA), together with R. Matheson (NI Australia) met in Sydney with personnel from the National Industrial Chemicals Notification and Assessment Scheme (NICNAS). NICNAS is responsible for assessing chemicals in the Australian economy and NICNAS's goal under IMAP is to provide assessments for 3000 chemicals in four years, with an initial assessment of 600 chemicals in the first year. At the meeting, presentations were given by J. Wickramaratna (NICNAS), A. Oller, R. Matheson and C. Schlekot from NiPERA and Nickel Institute. The participants were open and interested in the new science. Indications were clearly expressed that they felt nickel was a model for data and organization for other metals and that they were impressed with NI's input. The environmental scientist was very receptive to C. Schlekot's presentation. He indicated that NICNAS should take a hybrid approach for the risk characterization process in line with the presentation. The value of the relationships fostered by this meeting was demonstrated in 2014 when NiPERA was offered a chance to provide comments on the IMAP draft risk assessments of nickel substances prior to the formal public consultation.

New Developments: In 2015, \$10,000 were added to the budget to cover costs associated with a new Science dissemination initiative. A meeting with Canadian companies is planned to take place in Toronto (Canada) on June 2015. Another possible workshop with NI member companies on the subject of OEL and drinking water standards is planned to take place in Tokyo (Japan) on September 2015.

Task: Non linear meta-analysis of cancer risks in nickel workers

Contractor: S. Seilkop (SKS Consulting Services)

This project to be conducted by S. Seilkop will utilize recently developed statistical techniques (e.g., multiple additive regression tree analysis) to determine the most likely shapes (linear vs. nonlinear) of lung cancer exposure-response functions for different forms of nickel (sulfidic, oxidic, soluble, metallic). During the conduct of project 02-140101-0211 (M. Vincent), standard linear multiple regression models based on the available epidemiological data (from ~45 groups of workers) were found to be difficult to develop and interpret based on lack of fit and possible biases induced by influential/outlier observations, collinearity in exposure/regression estimates, and possible misspecification of model form. This project aims to employ statistical techniques that are designed to mitigate the impacts of most of these issues. Preliminary analysis of the same dataset used by Vincent suggests that non-linear functions are plausible models of exposure-response for the main nickel forms. Yet linear models are generally used by regulatory agencies to calculate cancer risks associated with nickel exposure. Applying non-linear approaches may result in better data fits, and substantially reduced estimates of risk at low levels of exposure. This project will result in a manuscript for publication.

New Developments: Funds of \$30,000 were approved for this project in 2015. A proposal for this project is expected by Q3 2015 once the Vincent et al manuscript (task 02-140101-0211) is submitted for publication.

Application for Extension of Time To File an Exempt Organization Return

OMB No 1545-1709

► File a separate application for each return.

► Information about Form 8868 and its instructions is at www.irs.gov/form8868.

- If you are filing for an **Automatic 3-Month Extension**, complete only **Part I** and check this box ☒
- If you are filing for an **Additional (Not Automatic) 3-Month Extension**, complete only **Part II** (on page 2 of this form)

Do not complete Part II unless you have already been granted an automatic 3-month extension on a previously filed Form 8868

Electronic filing (e-file). You can electronically file Form 8868 if you need a 3-month automatic extension of time to file (6 months for a corporation required to file Form 990-T), or an additional (not automatic) 3-month extension of time. You can electronically file Form 8868 to request an extension of time to file any of the forms listed in Part I or Part II with the exception of Form 8870, Information Return for Transfers Associated With Certain Personal Benefit Contracts, which must be sent to the IRS in paper format (see instructions). For more details on the electronic filing of this form, visit www.irs.gov/efile and click on e-file for Charities & Nonprofits

Part I Automatic 3-Month Extension of Time. Only submit original (no copies needed).

A corporation required to file Form 990-T and requesting an automatic 6-month extension - check this box and complete Part I only ☐

All other corporations (including 1120-C filers), partnerships, REMICs, and trusts must use Form 7004 to request an extension of time to file income tax returns

		Enter filer's identifying number
Type or print	Name of exempt organization or other filer, see instructions NICKEL PRODUCERS ENVIRONMENTAL RESEARCH ASSOCIATION, INC.	Employer identification number (EIN) or 13-3070077
File by the due date for filing your return. See instructions	Number, street, and room or suite no. If a P.O. box, see instructions 2525 MERIDIAN PARKWAY, NO. 240	Social security number (SSN)
	City, town or post office, state, and ZIP code. For a foreign address, see instructions DURHAM, NC 27713	

Enter the Return code for the return that this application is for (file a separate application for each return)

04

Application Is For	Return Code	Application Is For	Return Code
Form 990 or Form 990-EZ	01	Form 990-T (corporation)	07
Form 990-BL	02	Form 1041-A	08
Form 4720 (individual)	03	Form 4720 (other than individual)	09
Form 990-PF	04	Form 5227	10
Form 990-T (sec 401(a) or 408(a) trust)	05	Form 6069	11
Form 990-T (trust other than above)	06	Form 8870	12

GERALD M. SCHUETZ

- The books are in the care of ► **2525 MERIDIAN PARKWAY, STE 240 - DURHAM, NC 27713**

Telephone No ► **919-595-1946**

Fax No ►

- If the organization does not have an office or place of business in the United States, check this box ☐
- If this is for a Group Return, enter the organization's four digit Group Exemption Number (GEN) _____ If this is for the whole group, check this box ☐. If it is for part of the group, check this box ☐ and attach a list with the names and EINs of all members the extension is for.

- 1 I request an automatic 3-month (6 months for a corporation required to file Form 990-T) extension of time until **AUGUST 15, 2015**, to file the exempt organization return for the organization named above. The extension is for the organization's return for
 ► ☒ calendar year **2014** or
 ► ☐ tax year beginning _____, and ending _____

- 2 If the tax year entered in line 1 is for less than 12 months, check reason ☐ Initial return ☐ Final return
☐ Change in accounting period

3a If this application is for Forms 990-BL, 990-PF, 990-T, 4720, or 6069, enter the tentative tax, less any nonrefundable credits. See instructions	3a	\$	0.
b If this application is for Forms 990-PF, 990-T, 4720, or 6069, enter any refundable credits and estimated tax payments made. Include any prior year overpayment allowed as a credit.	3b	\$	0.
c Balance due. Subtract line 3b from line 3a. Include your payment with this form, if required, by using EFTPS (Electronic Federal Tax Payment System). See instructions	3c	\$	0.

Caution. If you are going to make an electronic funds withdrawal (direct debit) with this Form 8868, see Form 8453-EO and Form 8879-EO for payment instructions.