



THE RIGHTS-BASED BUSINESS CASE FOR SCIENCE:

HOW SCIENCE HELPS
COMPANIES RESPECT
RIGHTS AND MANAGE
RISKS

07.16.15

**COMPANIES CAN
FORESEE, MITIGATE AND
MANAGE HUMAN RIGHTS
RISKS AND ALLEGATIONS
THROUGH:**

- **STRONG DATA
COLLECTION**
- **ANALYZED
CAREFULLY, AND**
- **REPORTED IN LAY
TERMS**
- **BEGINNING BEFORE
CONSTRUCTION, AND**
- **ENDURING
THROUGHOUT
OPERATIONS &
CLOSURE**



KAYELEKERA FAST FACTS

- **8-YEAR URANIUM MINE**
- **FIRST MAJOR FOREIGN INVESTMENT IN COUNTRY**
- **LOCATED IN THE MARGINALIZED NORTH OF THE COUNTRY**
- **LITERACY RATES: 61%**
- **HIV RATES: 11%**
- **ELECTRIFICATION RATES: 9%**



HUMAN RIGHTS IMPACT ASSESSMENT FINDINGS

- INCREASINGLY POSITIVE IMPACTS OVER TIME
- MAJOR CONTRIBUTIONS FROM HEALTH PRACTITIONERS, ENGINEERS (AND HUMAN RESOURCES MANAGEMENT)
- MAJOR FAILINGS IN ENVIRONMENTAL REPORTING



NEGATIVE -- MIXED -- POSITIVE

	Initial Assessment 2009	1 st Monitoring 2010	2 nd Monitoring 2013	3 rd Monitoring 2015
Right to Work	Green	Green	Green	Green
Right to Just Remuneration	Yellow	Green	Green	Green
Freedom of Association/Unionization	Green	Yellow	Green	Green
Right to Favorable Work Conditions	Green	Green	Green	Green
Nondiscrimination	Orange	Orange	Green	Green
Right to Housing	Yellow	Green	Green	Green
Right to Health (non HIV)	Yellow	Blue	Green	Blue
Right to Health (HIV)	Red	Orange	Yellow	Green
Right to Clean Environment	Grey	Black	Black	Black
Right to an Adequate Standard of Living	Green	Green	Green	Green
Right to Food	Yellow	Yellow	Yellow	Green
Right to Water	Yellow	Blue	Blue	Blue
Freedom of Expression, Freedom of Assembly	Yellow	Yellow	Green	Yellow
Right to Participate in public life (Freedom from corruption)	Orange	Orange	Orange	Orange
Security of Person (freedom from fear)	Yellow	Yellow	Orange	Orange
Right to Education	Green	Green	Green	Blue

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SCIENCE ISN'T EVERYTHING IN HRIA, BUT IT IS A LOT OF THINGS



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Right to Education	Green	Green	Green	Blue

HUMAN RIGHTS IMPACT
ASSESSMENT FINDINGS:
WHERE SCIENCE LEADS

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Right to Clean Environment	Grey	Black		
Right to Food	Yellow	Yellow	Yellow	Green
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NEGATIVE -- MIXED -- POSITIVE

ENGINEERING,
HYDROLOGY, COMPUTER
SCIENCE

- **RETURN WATER POND (IT'S
JUST STORM WATER)**



ENGINEERING,
HYDROLOGY, COMPUTER
SCIENCE

- RETURN WATER POND (IT'S JUST STORM WATER)
- TAILINGS DAM



**ENGINEERING,
HYDROLOGY, COMPUTER
SCIENCE**

- **RETURN WATER POND (IT'S JUST STORM WATER)**
- **TAILINGS DAM**
- **RE-ENGINEERING THE MILL INTO A WATER TREATMENT PLANT (AND REPROGRAMMING THE CHEMICAL PROCESS PROGRAM; AND RETRAINING THE PEOPLE)**



ENVIRONMENTAL SCIENCES

- **96 WATER MONITORING POINTS**
- **9 DUST MONITORING STATIONS**
- **RADIATION MONITORING
BADGES ON WORKERS**



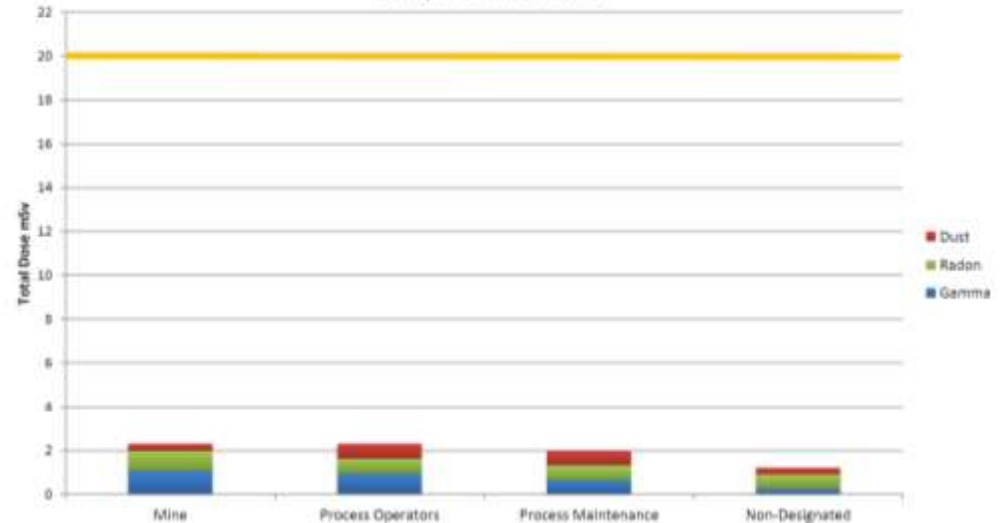
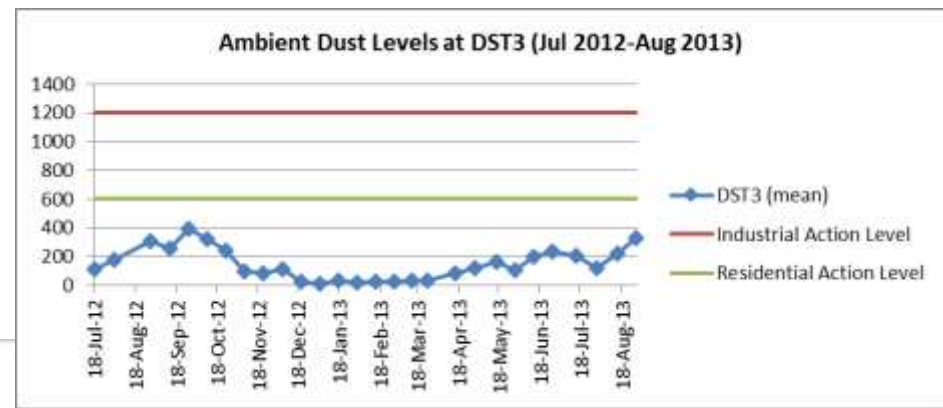
ENVIRONMENTAL MONITORING

- 96 WATER MONITORING POINTS
- 9 DUST MONITORING STATIONS
- RADIATION MONITORING
BADGES ON WORKERS



BASELINE & MONITORING DATA COLLECTION

- DUST ENTRAINMENT
- OCCUPATIONAL RADIATION EXPOSURE
- URANIUM IN SURFACE AND GROUNDWATER – BASELINE ONLY



Concentrations in stream water (mBq/l)				
River	U-238	Ra-226	Pb-210	Th-232
Sere	40-260	3-960	100-820	< 1
Champhanji	1 400	3 000-11 000	900-3 000	< 1
North Rukuru	5-120	< 30	< 50	~ 1

2012 DATA - NGO

Table 2 Radiological characteristics of surface water samples

Source: CRIIRAD

Sample Code (on site)	SW1	SW2	SW4	SW3	SW5
CRIIRAD Lab Code	280512A1	280512A2	280512A4	280512A3	280512A5
Location	Sere river upstream path leading to Nkhachira (upstream confluence with Chapwasha river)	Chapwasha river about 150 m from junction with Sere river	"Champhanji" river downstream open pit	Sere river downstream Champhanji river and open pit	North Rukuru river (old bridge) / downstream Sere river
Description	Surface water (right bank)	Surface water (left bank)	Surface water of a stream	Surface water (right bank)	Surface water
GPS coordinates	S9 58.052	S9 58.255	S9 58.942	S9 59.421	S9 56.620
GPS coordinates	E33 40.866	E33 41.001	E33 42.014	E33 42.422	E33 46.503
Sampling time (local)	20.5.12 14:00	20.5.12 14:40	21.5.12 15:00	21.5.12 12:40	22.5.12 17:20

Uranium (a)					
Uranium 238 (µg/l)	0.22	0.47	5.230	42.8	1.45
Calc. U238 activity (Bq/l)	0.003	0.006	65,380 mBq/l	0.535	0.02
Uranium 235 (% uranium 238)	0.68	0.70	0.78	0.68	0.72

2004 DATA - EIA

Concentrations in stream water (mBq/l)				
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Sere	40-260	3-960	100-820	< 1
Champhanji	1,400	3 000-11 000	900-3 000	< 1
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47-FOLD INCREASE

THE TROUBLE WITH
SCIENTIFIC OPACITY:
PUBLIC BASELINE
WITHOUT PUBLIC
MONITORING

- SHARPLY ELEVATED U-238 LEVELS IN THE CHAMPHANJI STREAM ADJACENT THE MINE TRIGGERED PUBLIC FEAR
- MINE ALLEGES IT WAS ALREADY MANAGING THE ISSUE, BUT OPAQUELY

THE TROUBLE WITH SCIENTIFIC OPACITY (2)

- **WEAK AND DELAYED
REPORTING HAS EXACERBATED
DISTRUST**

2010



2013



THE TROUBLE WITH SCIENTIFIC OPACITY

- CHEMICAL SPILLS
 - RADIATION TOTAL EXPOSURE
 - DUST PARTICLE SIZE/CONTENT
 - HIV PREVALENCE
- THE HUMAN DIMENSIONS
WITHIN THE COMMUNITY



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THANK YOU.

**METHODOLOGY,
TOOLKIT &
MORE
INFORMATION:**

WWW.NOMOGAIA.ORG/TOOLS

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