

File No: LTD/1801

April 2015

**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME  
(NICNAS)**

**PUBLIC REPORT**

**Control Agent 7042**

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (the Act) and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Department of Health, and conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Department of the Environment.

For the purposes of subsection 78(1) of the Act, this Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

This Public Report is also available for viewing and downloading from the NICNAS website or available on request, free of charge, by contacting NICNAS. For requests and enquiries please contact the NICNAS Administration Coordinator at:

Street Address:	Level 7, 260 Elizabeth Street, SURRY HILLS NSW 2010, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL:	+ 61 2 8577 8800
FAX:	+ 61 2 8577 8888
Website:	<a href="http://www.nicnas.gov.au">www.nicnas.gov.au</a>

**Director  
NICNAS**

## **TABLE OF CONTENTS**

SUMMARY .....	3
CONCLUSIONS AND REGULATORY OBLIGATIONS .....	3
ASSESSMENT DETAILS .....	6
1. APPLICANT AND NOTIFICATION DETAILS .....	6
2. IDENTITY OF CHEMICAL.....	6
3. COMPOSITION.....	6
4. PHYSICAL AND CHEMICAL PROPERTIES .....	6
5. INTRODUCTION AND USE INFORMATION .....	7
6. HUMAN HEALTH IMPLICATIONS .....	8
6.1. Exposure Assessment.....	8
6.1.1. Occupational Exposure.....	8
6.1.2. Public Exposure.....	8
6.2. Human Health Effects Assessment .....	8
6.3. Human Health Risk Characterisation .....	9
6.3.1. Occupational Health and Safety .....	9
6.3.2. Public Health .....	9
7. ENVIRONMENTAL IMPLICATIONS.....	9
7.1. Environmental Exposure & Fate Assessment .....	9
7.1.1. Environmental Exposure .....	9
7.1.2. Environmental Fate .....	10
7.1.3. Predicted Environmental Concentration (PEC).....	10
7.2. Environmental Effects Assessment.....	10
7.2.1. Predicted No-Effect Concentration .....	10
7.3. Environmental Risk Assessment .....	10
<u>APPENDIX: PHYSICAL AND CHEMICAL PROPERTIES.....</u>	<u>11</u>
BIBLIOGRAPHY .....	12

## SUMMARY

The following details will be published in the NICNAS *Chemical Gazette*:

ASSESSMENT REFERENCE	APPLICANT(S)	CHEMICAL OR TRADE NAME	HAZARDOUS CHEMICAL	INTRODUCTION VOLUME	USE
LTD/1801	DuluxGroup (Australia) Pty Ltd  Boron Molecular Pty Ltd  Nuplex Industries (Aust) Pty Ltd	Control Agent 7042	ND*	≤ 1 tonne per annum	Polymer manufacture

\*ND = not determined

## CONCLUSIONS AND REGULATORY OBLIGATIONS

### **Hazard classification**

As no toxicity data were provided, the notified chemical cannot be classified according to the *Globally Harmonised System for the Classification and Labelling of Chemicals* (GHS), as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

### **Human health risk assessment**

Provided that the recommended controls are being adhered to, under the conditions of the occupational settings described, the notified chemical is not considered to pose an unreasonable risk to the health of workers.

When used in the proposed manner, the notified chemical is not considered to pose an unreasonable risk to public health.

### **Environmental risk assessment**

On the basis of the assessed use pattern, the notified chemical is not considered to pose an unreasonable risk to the environment.

### **Recommendations**

#### REGULATORY CONTROLS

##### Hazard Classification and Labelling

- Due to the sensitisation properties of the notified chemical, the notifier should consider their obligations under the Australian Dangerous Goods Code.

##### Health Surveillance

- As the notified chemical is a skin sensitizer, employers should carry out health surveillance for any worker who has been identified in the workplace risk assessment as having a significant risk of sensitisation.

#### CONTROL MEASURES

##### Occupational Health and Safety

- A person conducting a business or undertaking at a workplace should implement the following engineering controls to minimise occupational exposure to the notified chemical during manufacture and end-use:
  - Enclosed, automated processes, where possible;
  - Local exhaust ventilation, if significant inhalation potential is anticipated;

- A person conducting a business or undertaking at a workplace should implement the following safe work practices to minimise occupational exposure during handling of the notified chemical as introduced:
  - Avoid skin and eye contact
- A person conducting a business or undertaking at a workplace should ensure that the following personal protective equipment is used by reformulation workers to minimise occupational exposure to the notified chemical:
  - Coveralls
  - Safety goggles
  - Impervious gloves
  - Respirators, if significant inhalation exposure is expected
- A copy of the (M)SDS should be easily accessible to employees.
- If products and mixtures containing the notified chemical are classified as hazardous to health in accordance with the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)* as adopted for industrial chemicals in Australia, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation should be in operation.

#### Disposal

- Where reuse or recycling are not appropriate, dispose of the notified chemical in an environmentally sound manner in accordance with relevant Commonwealth, state, territory and local government legislation.

#### Storage

- The handling and storage of the notified chemical should be in accordance with the Safe Work Australia Code of Practice for *Managing Risks of Hazardous Chemicals in the Workplace* (SWA, 2012) or relevant State or Territory Code of Practice.

#### Emergency procedures

- Spills or accidental release of the notified chemical should be handled by physical containment, collection and subsequent safe disposal.

### Regulatory Obligations

#### *Secondary Notification*

This risk assessment is based on the information available at the time of notification. The Director may call for the reassessment of the chemical under secondary notification provisions based on changes in certain circumstances. Under Section 64 of the *Industrial Chemicals (Notification and Assessment) Act (1989)* the notifier, as well as any other importer or manufacturer of the notified chemical, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply even when the notified chemical is listed on the Australian Inventory of Chemical Substances (AICS).

Therefore, the Director of NICNAS must be notified in writing within 28 days by the notifier, other importer or manufacturer:

- (1) Under Section 64(1) of the Act; if
  - the importation volume exceeds one tonne per annum notified chemical;or
- (2) Under Section 64(2) of the Act; if
  - the function or use of the chemical has changed from polymer manufacture, or is likely to change significantly;
  - the amount of chemical being introduced has increased, or is likely to increase, significantly;

- the method of manufacture of the chemical in Australia has changed, or is likely to change, in a way that may result in an increased risk of an adverse effect of the chemical on occupational health and safety, public health, or the environment;
- additional information has become available to the person as to an adverse effect of the chemical on occupational health and safety, public health, or the environment.

The Director will then decide whether a reassessment (i.e. a secondary notification and assessment) is required.

*(Material) Safety Data Sheet*

The (M)SDS of the notified chemical provided by the notifier was reviewed by NICNAS. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

## **ASSESSMENT DETAILS**

### **1. APPLICANT AND NOTIFICATION DETAILS**

#### APPLICANTS

DuluxGroup (Australia) Pty Ltd (ABN: 67 000 049 427)  
1956 Dandenong Road  
CLAYTON VIC 3168

Boron Molecular Pty Ltd (ABN: 76 092 480 674)  
500 Princess Highway  
NOBLE PARK VIC 3174

Nuplex Industries (Aust) Pty Ltd (ABN: 25 000 045 572)  
49-61 Stephen Road  
BOTANY NSW 2019

#### NOTIFICATION CATEGORY

Limited-small volume: Chemical other than polymer (1 tonne or less per year).

#### EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication: chemical name, other names, CAS number, molecular and structural formulae, molecular weight, analytical data, degree of purity, impurities, additives/adjuvants, use details and manufacture volume.

#### VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Variation to the schedule of data requirements is claimed as follows: Boiling point, vapour pressure, Hydrolysis as a function of pH, Partition coefficient, absorption/desorption, dissociation constant, particle size, flammability, autoignition temperature, explosive and oxidising properties.

#### PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

#### NOTIFICATION IN OTHER COUNTRIES

None

### **2. IDENTITY OF CHEMICAL**

#### MARKETING NAME(S)

Control agent 7042

#### MOLECULAR WEIGHT

< 500 Da

#### ANALYTICAL DATA

Reference NMR, IR and MS were provided.

### **3. COMPOSITION**

#### DEGREE OF PURITY

> 95%

### **4. PHYSICAL AND CHEMICAL PROPERTIES**

APPEARANCE AT 20 °C AND 101.3 kPa: Yellow-orange crystalline solid

Property	Value	Data Source/Justification
Melting Point/Freezing Point	28 – 29 °C	Measured
Boiling Point	Not determined	The notified chemical decomposes from 201 °C, and is not expected to boil prior to decomposition.

Density	1,244 kg/m <sup>3</sup> at 28 °C	Measured
Vapour Pressure	5.54 × 10 <sup>-7</sup> kPa at 25 °C	Calculated using the Modified Grain Method (EPIWIN)
Water Solubility	1.4 × 10 <sup>-5</sup> g/L at pH 6.6, 22 °C	Measured
Hydrolysis as a Function of pH	Not determined	The notified chemical contains hydrolysable functional groups; however, hydrolysis is expected to be very slow in the environmental pH range (4–9) at ambient temperature.
Partition Coefficient (n-octanol/water)	Not determined	Expected to partition to n-octanol based on its low water solubility
Adsorption/Desorption	Not determined	Expected to adsorb to soil, sediment and sewage sludge based on its low water solubility
Dissociation Constant	Not determined	Does not contain dissociable functionality
Flash Point	209 °C	Measured
Autoignition Temperature	Not determined	Not expected to autoignite under normal conditions of use
Explosive Properties	Not determined	Contains no functional groups that would imply explosive properties
Oxidising Properties	Not determined	Contains no functional group that would imply oxidative properties

## DISCUSSION OF PROPERTIES

For full details of tests on physical and chemical properties, refer to Appendix.

*Reactivity*

The notified chemical is expected to be stable under normal conditions of use.

**Physical hazard classification**

Based on the submitted physico-chemical data depicted in the above table, the notified chemical is not recommended for hazard classification according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia.

**5. INTRODUCTION AND USE INFORMATION**

## MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

The notified chemical will be manufactured in Australia.

## MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	< 1	< 1	< 1	< 1	< 1

## IDENTITY OF MANUFACTURER

Boron Molecular Pty Ltd  
500 Princess Highway  
NOBLE PARK VIC 3174

## TRANSPORTATION AND PACKAGING

The notified chemical will be packaged in 25 L polypropylene containers or 200 L polylined drums and transported to the end-use site by road.

## USE

The notified chemical will be used in the manufacture of acrylic polymer resin. The final concentration of the notified chemical in the polymer resin will be approximately 3.14% (w/w).

The acrylic polymer resin manufactured will then be used in the manufacture of waterborne latex that will then be formulated into decorative paints.

## OPERATION DESCRIPTION

The notified chemical will be manufactured and used in Australia.

*Manufacture*

The notified chemical will be manufactured in a batch type reactor with reactants added as solids or pumped as liquids in to the reactor at various stages and heated over a period of five hours in order to manufacture the notified chemical. Upon reaction completion, the notified chemical will be separated from the aqueous phase and packaged into 25 L or 200 L containers for transportation to the site where it will be manufactured into acrylic polymer resin. During the manufacturing process, samples will be collected from inside the reactor via dedicated sampling valve and tested for quality assurance.

*End-use*

The notified chemical will be used to manufacture acrylic polymer resin in a batch type reactor. The reactants will be added via feed pumps (liquids) or manually (solids) by opening the hatch in the top of the reactor by the plant operator under local exhaust ventilation. The notified chemical will make-up 3.14% of the acrylic polymer resin. At the end of the polymerisation process the notified chemical will be irreversibly incorporated into the acrylic polymer resin. The acrylic polymer resin once ready, will be transferred into containers of various sizes ranging from 200 L to 1000 L.

The acrylic polymer resin will be used to make waterborne acrylic latex and this then will be used to manufacture waterborne decorative interior paints for domestic use.

**6. HUMAN HEALTH IMPLICATIONS****6.1. Exposure Assessment****6.1.1. Occupational Exposure**

## CATEGORY OF WORKERS

<i>Category of Worker</i>	<i>Exposure Duration (hours/day)</i>	<i>Exposure Frequency (days/year)</i>
Manufacture – Plant operator	5	20
Manufacture – Quality Control	2	20
Manufacture – Maintenance	1–2	20
Manufacture – Storage and Transport	2	20
End-use – Plant operator	1	20

## EXPOSURE DETAILS

Dermal and ocular and perhaps inhalation exposure to the notified chemical at up to > 95% concentration may occur during the manufacture of the notified chemical, sample collection for testing, separation and packaging of the chemical and its use in acrylic polymer resin manufacture. Exposure may also occur during quality control testing and equipment cleaning, maintenance and repair. Exposure is expected to be minimized through the use of enclosed systems, local exhaust ventilation and the use of personal protective equipment (PPE) such as chemical resistant gloves, overalls, boots and goggles. Respiratory protection may also be worn if there is inadequate ventilation and/or there is an increase in the potential for inhalation exposure. The notified chemical will be unavailable for exposure once it is polymerised in the manufacturing process of acrylic polymer resin.

**6.1.2. Public Exposure**

The notified chemical is intended for industrial use only, and will not be available to the public. Direct exposure would therefore not be expected. Indirect exposure from accidental spills or environmental sources may be possible, but are unlikely for the proposed use. Once reacted to form the acrylic polymer resin, the notified chemical will be unavailable for further exposure.

**6.2. Human Health Effects Assessment**

No toxicity studies on the notified chemical were submitted

*Toxicokinetics, metabolism and distribution.*

No data on toxicokinetics for the notified chemical was provided. For dermal absorption, molecular weights below 100 Da. are favourable for absorption and molecular weights above 500 Da. do not favour absorption (ECHA, 2014). Dermal uptake is likely to be low if the water solubility is below 1 mg/L and the rate of



penetration may be limited by the rate of transfer between the stratum corneum and the epidermis if log P values are above 4 (ECHA, 2014). In addition evidence of skin sensitisation or irritation increase the probability of dermal absorption occurring (ECHA, 2014). Despite the low water solubility ( $1.4 \times 10^{-5}$  g/L at pH 6.6, 22 °C) of the notified chemical, due to the low molecular weight (< 500 Da.) and the irritation and sensitisation properties, dermal absorption across biological membranes is expected.

#### *Irritation and sensitisation.*

While no test data was provided for the notified chemical, the notifiers MSDS for the product Control Agent 7042 (> 95% notified chemical) mention that it is a skin irritant, a severe eye irritant and a skin sensitiser.

#### **Health hazard classification**

As no toxicity data were provided, the notified chemical cannot be classified according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

The MSDS provided by the notifier for the product Control Agent 7042 (> 95% notified chemical), carries the following risk phrases:

R38 – Irritating to skin  
R41 – Risk of serious damage to eyes  
R43 – May cause sensitisation by skin contact

### **6.3. Human Health Risk Characterisation**

#### **6.3.1. Occupational Health and Safety**

The notified chemical is stated as being a skin irritant, a severe eye irritant and a skin sensitiser. Therefore, control measures are required to mitigate possible adverse health effects to the workers who may come into contact with the notified chemical.

Workers may experience dermal and accidental ocular and perhaps inhalation exposure to the notified chemical (at up to > 95% concentration) during the manufacture, transport and end-use of the notified chemical. However, the notifier anticipated use of personal protective equipment and engineering controls (largely automated and enclosed systems and local exhaust ventilation) should minimise exposure. Therefore, considering the proposed use of engineering controls and PPE, the risk to workers during the manufacture, transport and end-use of the notified chemical is not considered to be unreasonable.

#### **6.3.2. Public Health**

The notified chemical will not be available to the public. General public may be exposed to the decorative paint in which the notified chemical will be used but at this stage the chemical will be irreversibly incorporated into the polymer resin and unavailable. Therefore, the notified chemical is not considered to pose an unreasonable risk to public health.

## **7. ENVIRONMENTAL IMPLICATIONS**

### **7.1. Environmental Exposure & Fate Assessment**

#### **7.1.1. Environmental Exposure**

##### **RELEASE OF CHEMICAL AT SITE**

The notified chemical will be used in the manufacture of acrylic polymer resin in Australia. The notified material is for industrial use only and as such it will largely be confined to industrial sites except when being transported. The notified chemical will be manufactured in a reactor which is an enclosed batch-type system where raw material additions are performed by the operator via feed pumps. Any addition of solid material is via a hatch in the top of the reactor under a local exhaust extraction. Therefore, release of the notified chemical to the environment from manufacture is expected to be insignificant. The reactor in which the notified material is manufactured and the containers used for transporting the material will be washed with sodium hydroxide solution. These washings, along with any accidental spillages on site, will pass through interceptor pits and are contained prior to discharge to the sewer as trade waste.

##### **RELEASE OF CHEMICAL FROM USE**

The acrylic polymer resin containing the notified chemical will be used in the manufacture of waterborne acrylic latex. The waterborne acrylic polymer latex is manufactured in an enclosed batch-type reactor, where raw

materials are pumped into the reactor from enclosed feed vessels. Therefore, release of the acrylic polymer resin to the environment from manufacture is expected to be insignificant. The acrylic polymer resin will no longer be present in its original form, rather as part of the polymer backbone of the acrylic latex. The waterborne acrylic latex contains the acrylic polymer resin at a level of 0.45 wt%, and therefore only contains 0.014 wt% of the notified material.

The waterborne acrylic latex containing the notified chemical will be further formulated into waterborne decorative paint. The paint is manufactured in stirred mixing vessels ranging from 5,000 L to 40,000 L in volume, with the acrylic latex being pumped from bulk storage tanks directly to the mixer. Upon completion of the manufacturing process the paint is filled into epon-lined tin cans of varying sizes on an automated filling line.

The reactor used to prepare the acrylic polymer resin is expected to be washed with sodium hydroxide solution at the end of the manufacturing process. These washings, along with any accidental spillages on site, are expected to pass through interceptor pits and to be contained prior to discharge to the sewer as trade waste.

#### RELEASE OF CHEMICAL FROM DISPOSAL

After the notified chemical has been used for the preparation of acrylic polymer resin, the empty containers with residual chemical will be sealed and passed on to a waste management authority for disposal. Most of the product containing the notified chemical will ultimately end up in landfill along with the associated articles at the end of their useful lives.

#### 7.1.2. Environmental Fate

No environmental fate data were submitted. However, the notified chemical is not expected to be discharged to the aquatic environment, from manufacturing process, in significant quantities based on the intended use and probable disposal pathway.

The majority of the end product containing the notified chemical is expected to be irreversibly cured within an inert polymer matrix bound to articles following its use in paint. The majority of the product containing the notified chemical is expected to be disposed of to landfill as waste from spills, residues in empty import containers, and articles at the end of their useful life. The product containing the notified chemical that is disposed of to landfill is expected to remain associated with the substrate to which it has been applied and in its cured form it is not expected to be bioavailable nor biodegradable. Notified chemical in solid waste disposed of to landfill is not likely to be mobile due to its expected limited water solubility and incorporation into an inert matrix. The product containing the notified chemical will undergo slow biotic and abiotic degradation processes in landfill, or by thermal decomposition, to form water, and oxides of carbon and sulphur.

#### 7.1.3. Predicted Environmental Concentration (PEC)

The Predicted environmental concentration (PEC) was not calculated as, based on its reported use pattern, ecotoxicologically significant quantities are not expected to be released to the aquatic environment.

#### 7.2. Environmental Effects Assessment

No ecotoxicity data were submitted. Polymers without significant ionic functionality are generally of low concern to the environment.

##### 7.2.1. Predicted No-Effect Concentration

A predicted no-effect concentration (PNEC) has not been calculated for the notified chemical, based on its reported use pattern, ecotoxicologically significant quantities are not expected to be released to the aquatic environment.

#### 7.3. Environmental Risk Assessment

The risk quotient ( $Q = \text{PEC}/\text{PNEC}$ ) for the notified chemical has not been calculated as release to the aquatic environment in ecotoxicologically significant quantities is not expected based on its reported use pattern. The majority of the product containing the notified chemical will eventually be disposed to landfill following its use. In its cured state the product containing the notified chemical will be irreversibly bound into an inert matrix and is unlikely to leach or be bioavailable. On the basis of the assessed use pattern and assumed low hazard, the notified chemical is not considered to pose an unreasonable risk to the environment.

**APPENDIX: PHYSICAL AND CHEMICAL PROPERTIES****Density** 1,244 kg/m<sup>3</sup> at 28.1 °C

Method	In house method
Remarks	A 4 mL sample of the notified chemical was weighed inside a 5 mL syringe and the density calculated from this data.
Test Facility	Dulux

**Water Solubility**  $1.4 \times 10^{-5}$  g/L at pH 6.6, 22 °C

Method	OECD TG 105 Water Solubility. EC Council Regulation No 440/2008 A.6 Water Solubility.
Remarks	Flask Method
Test Facility	Leeder (2008)

**Flash Point** 209 °C

Method	Open cup method
Remarks	Two readings were taken
Test Facility	Intertek (2009)

## **BIBLIOGRAPHY**

- ECHA (2014) Guidance on Information Requirements and Chemical Safety Assessment Chapter R.7c: Endpoint specific guidance, November 2014, version 2.0. European Chemicals Agency, [http://echa.europa.eu/documents/10162/13632/information\\_requirements\\_r7c\\_en.pdf](http://echa.europa.eu/documents/10162/13632/information_requirements_r7c_en.pdf).
- Intertek (2009) Flash point testing of the notified chemical (Study No. AU190-40445/4311000, June, 2009) Melbourne, VIC, Australia, Intertek Testing Services (Australia) Pty Ltd (Unpublished report submitted by the notifier).
- Leeder (2008) (Study No. M081098, December, 2008). Australia, Leeder Consulting (Unpublished report submitted by the notifier).
- NOHSC (2004) Approved Criteria for Classifying Hazardous Substances, 3rd edition [NOHSC:1008(2004)]. National Occupational Health and Safety Commission, Canberra, AusInfo.
- NTC (National Transport Commission) 2007 Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG code), 7th Edition, Commonwealth of Australia
- SWA (2012) Code of Practice: Managing Risks of Hazardous Chemicals in the Workplace, Safe Work Australia, <http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/managing-risks-of-hazardous-chemicals-in-the-workplace>.
- United Nations (2009) Globally Harmonised System of Classification and Labelling of Chemicals (GHS), 3rd revised edition. United Nations Economic Commission for Europe (UN/ECE), <[http://www.unece.org/trans/danger/publi/ghs/ghs\\_rev03/03files\\_e.html](http://www.unece.org/trans/danger/publi/ghs/ghs_rev03/03files_e.html)>.
- US EPA (2009) Estimation Programs Interface Suite™ for Microsoft® Windows, v 4.00. United States Environmental Protection Agency. Washington, DC, USA, <<http://www.epa.gov/oppt/exposure/pubs/episuite.htm>>. Accessed 2014, Nov 20.