



# POTENTIAL TECHNOLOGY PROJECTS FOR UNIVERSITY RESEARCH

IRP is looking for scientists to develop these technologies to substitute imports. IRP will manage entire process of commercialization and technology transfer to industry. The technology must be economical and according to performance standardized of imported one. IRP will manage sample of targeted products, chemicals for trials, industry for investment in pilot scale and production. Scientists will get financial reward upon the success of technology at pilot scale.

**Note: Industry is also invited to invest in these technologies**

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POLYMERS		
PRODUCTS	IMPORT /YEAR	PRICE /KG
ABS Resin (Acrylonitrile Butadiene Styrene Resin)	7,707 MT	2.0 USD
Super Absorbent polymer (Polyacrylic Resin)	1,585 MT	2.2 USD
TPR Shoe Sole grade	500 MT	1.5-3.3 USD
Styrene Butadiene Rubber (SBR)	5,204 MT	2.2 USD
Nitrile Butadiene Rubber (NBR)	350 MT	1.2-2 USD
Polyurethane dispersion (water Base)		2-3 USD
Epoxy Resin for composites (Latent/Room Temp curable)		

ADHESIVE		
PRODUCTS	IMPORT /YEAR	PRICE /KG
PU Adhesive	510 MT	4.2 USD
Cyano acrylate	68 MT	8. USD
Epoxy (One/two Components)	900 MT	16-17 USD
EVA adhesive	1950 MT	1.05 USD
Hot melts Adhesives	1,500 MT	2.5-3 USD

TPR Shoe Adhesive (Grafted Chloroprene)	1,233 MT	3.0 USD
Sealants (one /Two Comonents)		
Silicone Sealants (neutral/Acidic)		
Pressure sensitive adhesives (PSA)		
Water Repllent PVAs		

## BIOTECHNOLOGY AND FOOD GRADE CHEMICALS POTENTIAL

CHEMICAL PRODUCTS	IMPORT /YEAR	PRICE /KG
Citric Acid	11,489 MT	0.75 USD
Sodium Citrate	1,044 MT	0.93 USD
Sodium Cyclamate	2,938 MT	0.67 USD
Sodium saccharin	737 MT	2.74 USD
Mono Sodium Glutamate	11911 MT	0.95 USD
Sodium Gluconate	957 MT	0.74 USD
Sodium Benzoate	705 MT	1-1.4 USD
Sodium Alginate	1500 MT	6.3-7.3 USD
Carboxy methyle Cellulose	250 MT	1.2 USD
Sodium starch glycolate	105 MT	1.5-2.5 USD
Ascorbic Acid	574 MT	3.3 USD
Calcium Gluconate	76 MT	1.8 USD
Food Grade preservatives	100 MT	
Food Emulsifiers		

## ENZYMES

CHEMICAL PRODUCTS	IMPORT /YEAR	PRICE /KG
Total import of Enzymes	1,728 MT	
Feed Grade Enzyme	158 MT	16-18 USD
Phytase	110 MT	8 USD

Amylase	50 MT	1.2-2.2 USD
Catalase	41 MT	2.85 USD
Protease	38 MT	7.2 USD
Food grade	40 MT	4-18 USD
Cellulase	25 MT	2-3 USD

### MARKET REQUIRED INORGANIC CHEMICALS

CHEMICAL PRODUCTS	IMPORT /YEAR	PRICE /KG
Sodium Dichromate	1360 MT	1.54 USD
Sodium Sulphate	52,000 MT	0.1-0.13 USD
Sodium Sulfide	14,000 MT	0.45-0.55 USD
Sodium HydroSulphite	1460 MT	1.45 USD
Sodium Formaldehyde Sulfoxilate	4600 MT	1.35 USD
Aluminium Hydroxide	3200 MT	0.33-1 USD
Sodium Tripolyphosphate (STPP)	5452 MT	0.73-0.83 USD
Sodium Bicarbonate	2820 MT	0.23 USD
Sodium Percarbonate	883 MT	0.77 USD
Sodium Perborate Monohydrate	1721 MT	1.13 USD
Sodium Formate	13729 MT	0.47 USD
Sodium Meta silicate	580 MT	0.3 USD
Sodium Chlorite	430 MT	0.7-0.84 USD
Sodium Silico Flouride	391 MT	
Sodium Thio Sulfate	225 MT	0.3 USD
Sodium Nitrate	475 MT	0.47 USD
Disodium Phosphate	364 MT	1.33 USD
Sodium Hexametaphosphate	262 MT	0.7-1.13 USD

Sodium Acetate trihydrate	354 MT	0.23 USD
Sodium Chloride	573 MT	0.37 USD
Sodium Nitrite	710 MT	0.4 USD

FOOD GRADE PRODUCTS			
CHEMICAL PRODUCTS			
FOOD GRADE PRESERVATIVES	Import /year	Price /kg	Function
Sodium Benzoate	705 MT	1-1.4 USD	Preservative
Ascorbic Acid	574 MT	3.3 USD	Anti oxidant Preservative
Calcium propionate/Propionic acid calcium	270 MT	1.1 USD	Preservative, Anti mould, Antitrop Agent
Calcium Lactate Gluconate	228 MT	5-16 MT	Anti oxidant
Lactic Acid	176 MT	1.7-5 USD	Anti Microbial
Calcium Lactate	60 MT	0.9 USD	Anti oxidant
Potassium Sorbate	194 MT	4.5-5 USD	Anti Microbial/Excipient
Sorbic Acid	2.6 MT	4.5 USD	Anti Microbial/Excipient
Fumaric Acid	33 MT	1.6 USD	Anti Microbial
Hydrogen Peroxide (35%, 50%)	10,477 MT	0.43-0.53 USD	Anti Microbial/Chemical
SWEETNER (NON NUTRITIVE )	Import /year	Price /kg	Function
Sodium Cyclamate	2,938 MT	0.67 USD	Sweetner
Sorbitol Powder	131 MT	1.3-1.4 USD	Pharma
Sorbitol Liquid	5,113 MT	0.5-0.7 USD	Pharma
Glycerine	5681 MT	0.90 USD	Pharma/ Misc
Sodium saccharin	737 MT	2.74 USD	Sweetner
Lactulose Solution	647 MT	3.2-3.5 USD	Pharma
Lactulose Liquid	208 MT	1.65 USD	Pharma
Aspartame Powder	47 MT	15-16 USD	Food/Pharma

Polyol KAP	35 MT	2 USD	Pharma
Manitol	11 MT	2.35-6.4 USD	Pharma
Acesulfame-K	7.5 MT	5-6 USD	Beverage/Pharma
Sucralose	1.5 MT	65-75 USD	Food/Pharma
<b>THICKNERS</b>	<b>Import /year</b>	<b>Price /kg</b>	<b>Function</b>
Sodium Alginate	1500 MT	6.3-7.3 USD	Thickener
Sodium Alginate Printex	1,473 MT	7-9 MT	Thickener/Printing Thickener
Microcrystalline Cellulose	501 MT	2.8-4 MT	Pharma/Misc
Microcrystalline Cellulose PH 200, 101	407 MT	2.4-3.2 USD	Pharma
Carboxy methyle Cellulose (CMC)	561	0.85-4 USD	Pharma/Food/Misc
Modified Starch	368 MT	0.84-2.1 USD	Pharma/Misc
Sanocat Cationic Starch	150 MT	0.71 USD	Paper (century paper)
Sodium starch glycolate	105 MT	1.5-7.5 USD	Thickener food/Pharma
Seaweed Powder	16 MT	4.2 MT	Thickener
<b>FOOD EMULSIFIERS</b>	<b>Import /year</b>	<b>Price /kg</b>	<b>Function</b>
Soya Lecithin	720 MT	0.9-1.1 USD	Emulsifier
Mono Glyceride Stearate	48 MT	1 USD	Emulsifier
Polysorbate (Tween 60)	12 MT	5-6 USD	Emulsifier
Esters of Mono Glycerides			
with acetic/lactic/citric /tartaric			
<b>VITAMINS</b>	<b>Import /year</b>	<b>Price /kg</b>	<b>Function</b>
Vitamin A	36 MT	27 USD	Nutriional addtitive/Pharma
Vitamin B1 HCL	37 MT	18-19 USD	Nutriional addtitive/Pharma
Vitamin B2	12 MT	18-20 USD	Nutriional addtitive/Pharma
Vitamin B3	80 MT	5-8 USD	Nutriional addtitive/Pharma
Vitamin B6 HCL	50 MT	22-25 USD	Nutriional addtitive/Pharma

Vitamin B12	10 MT	45-54 USD	Nutriional addttitive/Pharma
Vitamin C/Ascorbic	574 MT	3.3 USD	Anti oxidant Preservative
Vitamin C Coated	222 MT	3.5-4.5 USD	Nutriional addttitive/Pharma
Vitamin E/ E Acetate	221 MT	20-25 USD	Nutriional addttitive/Pharma
Vitamin D 3	218 MT	7-10 USD	Nutriional addttitive/Pharma
Vitamin K 3	9 MT	12-18 USD	Nutriional addttitive/Pharma
Vitamin (unknown)	113 MT		Nutriional addttitive/Pharma
<b>MISC</b>	<b>Import /year</b>	<b>Price /kg</b>	<b>Function</b>
Lysin Mono HCL	25,985 MT	0.8-0.9 USD	Feed grade
Citric Acid	11,489 MT	0.75 USD	Nutriional addttitive/Pharma
Sodium Citrate	1,044 MT	0.93 USD	Nutriional addttitive/Pharma
Potassium Citrate	58 MT	1.4-1.5 USD	Anti xidant
Mono Sodium Glutamate	11,911 MT	0.95 USD	Nutriional addttitive
Sodium Formaldehyde Sulfoxalate/Sulfoxylate (Rongalie )	3800 MT	1.3 USD	Dates/Misc
Trisodium Phosphate	523 MT	0.28-1.3 USD	Sequesterant /Anti oxidant
Disodium Phosphate	401 MT	1.5 USD	Sequesterant /Anti oxidant
Mono sodium Phosphate	196 MT	1.3 USD	Sequesterant /Anti oxidant
Ester Gum Food grade	324 MT	1.8 USD	
Sodium Hexameta Phosphate	262 MT	0.7-1 USD	Sequesterant /Anti oxidant
EDTA	162 MT	1.58-1.8 USD	Sequesterant /Pharma
<b>BASES</b>	<b>Import /year</b>	<b>Price /kg</b>	<b>Function</b>
Ammonium Bicarbonate	11,464 MT	0.24	Food/pharma/Misc
Sodium Bicarbonate	2,979 MT	0.28-0.95 USD	Food/pharma/Misc
Barium Carbonate	2,920 MT	0.35-0.4 USD	Food/pharma/Misc

Calcium Carbonate	2,252 MT	0.19-0.3 USD	Food/pharma/Misc
Potassium Carbonate	1,824 MT	1.7 USD	Food/pharma/Misc
Magnesium Carbonate	660 MT	0.75-1.25 USD	Food/pharma/Misc
Magnesium Hydroxide Paste/gel	229 MT	1.25-3.2 USD	Food/pharma/Misc
<b>FLAVOURS</b>	<b>Import /year</b>	<b>Price /kg</b>	<b>Function</b>
Acetic acid	6,651 MT	0.62 USD	Food/Pharma solvent/Textile
Ethyl Acetate	480 MT	1.3 USD	Food/Pharma
Methyl Salicylate	47 MT	1.75-2.0 USD	Food/Pharma
Iso-amyl Acetate	38 MT	2.7 USD	Food/Pharma
Benzaldehyde	18 MT	3-5 USD	Food/Pharma
Butyric acid	9 MT	2.2-2.6 MT	Food/Pharma
Desi Ghee Flavour			
<b>COLORS</b>	<b>Import /year</b>	<b>Price /kg</b>	<b>Function</b>
Acid base Food color Tetrazine	2.5 MT	2.45 USD	Food
Edicol Ponceau 4R 36002 Food Color	3 MT	8.7 USD	Food/Pharma
Color Erythrocsine Pink 23	0.3 MT	2.5-3.0 USD	Food/Pharma

## REQUIRED CHEMICAL INTERMEDIATES

PETROLEUM BASED INTERMEDIATES		
INTERMEDIATE	IMPORT /YEAR	PRICE /KG
Ethylene	70,427 MT	1.1 USD
Propylene		
Butadiene		
Ethylene Oxide		
Mono Ethylene Glycol	208,608 MT	1.1-1.2 USD
Polyethylene Glycol 400	380 MT	1.60 USD
Propylen Oxide		

Ethylen Dichloride/PVC	5,249 MT	0.2-0.3 USD
Toluene	9,512 MT	1.2-1.5 USD
Ortho Xylene	28,510 MT	1.38 USD
Para Xylene	252, 000 MT	1.4-1.6 USD
Benzene	2 MT	15-20 USD
Ethyl benzene	40 MT	
Styrene	66,000 MT	1.6-1.7 USD
Cumene & Phenol	2,600 MT	1.7 USD
Acetic Acid	6,651 MT	0.67 USD
Vinyl Acetate	11,667 MT	1.1 USD

## ACTIVE PHARMACEUTICAL INTERMEDIATES

INTERMEDIATE	IMPORT /YEAR	PRICE /KG
Diclophenac Sodium salt	97 MT	8.20 USD
Diclophenac Sodium Inj	459 MT	3.28 USD
Omeprazol Sodium	350 MT	0.5 USD
Ceftriaxone Sodium	95 MT	0.1 USD
Ceftriaxone Sodium inj	203 MT	4.3 USD
Lincony Cine HCL	300 MT	1-2 USD
Penciline Inj	100 MT	1.72- 3.1 USD
Metroclopramide	250 MT	0.24-0.47 USD
Dexamethason sod	150 MT	2.2-2.8 USD
Dexamethason sod Phosphate Inj	56 MT	4.6-5 USD
Iron (iii)Hydroxide Poly maltose Complex	150 MT	
Oxytetracycline inj	48 MT	0.22-0.3 USD
Oxytetracycline Dihydrate	36 MT	4.1-5 USD
Metrozol	250 MT	0.91 USD



Levo Floxacin	23 MT	1-3.46 USD
Energix	80 MT	1.87-2.36 USD
IVE-C	61 MT	
Antacid suspension	163 MT	0.85 USD
Rabbies Vaccin	20 MT	2.50 USD
Izovac Clone	42 MT	0.1-0.12 USD
Cineraraia maritima	19 MT	1.24 USD
Amiulin Sodium Inj	94 MT	
Defendryl Expectorant	58 MT	0.15 USD
Idomethacin Cap	56 MT	
Paracetamol	45 MT	0.52 USD
Ceftriaxone	37 MT	0.1 USD
Indo Methacin	28 MT	4.23 USD
Streptomycine Sulphate Inj	45 MT	2.4-2.6 USD
Doxy Cycline Hyclate	49 MT	9.14-11.42 USD
Metrozol Metronidazole	25 MT	0.9 USD
Ciprofloxacin Hydrochloride	11 MT	17-27 USD

## DYES INTERMEDIATES

INTERMEDIATE	IMPORT /YEAR	PRICE /KG
Oleam pilot plant (H <sub>2</sub> S <sub>2</sub> O <sub>7</sub> )		
H Acid (1-Amino, 8-Naphthol 3,6-disulphonic acid)	40 MT	5-8 USD
DASA (4,4-Diamino Sulphanilide)	30 MT	5.6 USD
Resorcinol	32 MT	6-7 USD
MPD (Meta phenelene Diamine)		6-8 USD
4-Nitro, 2-Amino Phenol (4- NAP)		3-4 USD

RH Acid (2,3-Diamino Benzene Sulphonic Acid)		
<b>CHEMICALS FROM MOLASSES</b>		
Citric Acid	11500 MT	0.7-1.0 USD
Acetic Acid	6772 MT	0.65 USD
Oxalic Acid	1632 MT	0.65 USD
Iso- butanol	1254 MT	1-1.2 USD
N-Butanol	366 MT	1.4 USD
Acetone		1.35 USD

Regards

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Spin off of IRP

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